THE AMERICAN GAS LIGHT JOURNAL

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION HEATING, MECHANICAL, CHEMICAL AND GENERAL SCIENCE

VOLUME LXXXIX., No. 3. Whole No. 1,728. NEW YORK, MONDAY, JULY 20, 1908. $3 PER ANNUM, IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER, Editors.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND-CLASS MATTER.

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[OFFICIAL NOTICE.]

Wrinkle Department, American Gas Institute.

To the Members of the American Gas Institute: All members of the Institute are earnestly requested to send in as soon as possible contributions for this year's Wrinkle Department report. The success of the Department depends entirely on the co-operation and assistance of the members.

Mail all contributions to Milan R. Bump, Editor, No. 60 Wall street, New York city.

BRIEFLY TOLD.

TENTATIVE PLAN BY COMMITTEE OF ARRANGEMENTS, NEW YORK MEETING, THE AMERICAN GAS INSTITUTF.—The local Committee of Arrangements having in charge the preparations for the annual meeting of the American Gas Institute, to be held in this city next October, has arranged the following tentative programme, a copy of which has been mailed to every member. Accompanying the outlining inclosure is a postal card, the queries whereon are to be replied to at as early a date as possible. Of course, the Committee does not ask for positive replies, but it does dwell on the necessity for prompt submission of answers, these being based on the likelihood or not of the responder's presence at the meeting. Replies are to be addressed to Mr. W. R. Addicks (Chairman), at the headquarters of the Institute, 25-29 West 39th street. As arranged the schedulings are:

Wednesday, Oct. 21st.—Business session for members, from 10 A.M. to 2 P.M., in the Auditorium of the United Engineering Societies' Building. The remainder of the day is at the disposal of the individual members, although it is suggested that arrangements may be made for visits to the gas and electric stations throughout the city.

Thursday, Oct. 22d.—Business sessions from 10 A.M. to 2 P.M., the balance of the day being at the wish and will of the visitors. The banquet will be held in the evening. A theater party for the ladies is also decided upon.

Friday, Oct. 23d.—There will be a short business session, lasting from 10 to 12:30 A.M., on the adjournment of which a steamer will be in readiness to convey the party to Astoria, there to inspect the plant of the Astoria Light, Heat and Power Company. Luncheon will be served while the trip on the East river to Astoria is being made. During the time of the inspection trip the ladies will be suitably entertained in the Auditorium of the Engineering Societies' Building.

Saturday, Oct. 24th. An excursion by steamer over the Hudson river to West Point is planned for this day, and the Committee is so endeavoring to arrange the schedule that those who desire to continue on their homeward trip may do so from the Point by train, via the West Shore or the New York Central Railroad.

Tickets for the banquet only have been put at $5; the price of tickets for the banquet and the West Point excursion, including entertainment of the ladies, will be $10. We repeat, inform Chairman Addicks as soon as possible of your intention to be present or not, and whether others are to accompany you.

THE MEETING OF THE GERMAN ASSOCIATION OF GAS AND WATER MEN.—The German Association of Gas and Water Branch Men held their 48th annual meeting at Berlin, June 16th, 17th and 18th last, and as usual, had a most interesting, profitable and genuinely pleasant session, according to the account published in the *German Gas Light Journal*, which is the "official organ" of the Association. The Chairman elect (Herr Nolte) being seriously ill, the "Substitute-Chairman," Herr E. Körting, Director General of the Imperial Continental Gas Association's plants at Berlin, officiated. Herr Körting is well-known to your readers through his contributions to the literature on the inclined, and, more recently, the vertical retort systems. The "Proceedings" of this German Association were in the whole much like those with which we are familiar. There was the speech of welcome on part of the city authorities, and a response for the Association by an eloquent member of the same, who in this instance was the acting Chairman. Then there was a presentation of a medal of honor, similar to the late American Gas Light Association's "Beal Medal;" and, in addition to the actual giving of the said medal to one of its distinguished members (Herr Kohn, of Frankfurt), Herr Wunder, of Leipzig, and Herr Söhren, of Bonn, were informed that they too were considered worthy of the honor, and would get the medal at subsequent meetings. Evidently our German friends believe there can be more than one peach in an orchard at one and the same time, and are willing to recognize the fact in a suitable manner. Then followed the address of the Chairman, who having had scant opportunity to prepare himself for the occasion, nevertheless acquitted himself remarkably well. Among other things he stated that the annual consumption of gas per inhabitant of "Greater Berlin" was now 4,696 cubic feet; and, despite energetic efforts on part of the

electric business, is still far and beyond and ahead of it. Much of this he stated was due to the introduction of prepayment meters, which are used extensively. Evidently, the Germans as a whole are not so prone to despoil said meters of the deposited cash; or, maybe, the meters are not placed in such easy-to-rob positions. The first day's session, after the routine business had been concluded, was devoted to the gas industry, there being papers on the development of the gas works of Berlin during the past decade; on coal storage; on the lighting of the city of Berlin, with special reference to compressed gas illumination; and, finally, an exhaustive and timely paper on the smoke nuisance in large cities. The second day's proceedings were devoted to questions of interest to the purveyors of water. The third day's meeting was again devoted to gas, the opening address being by Herr Körting, entitled "Introductory Remarks Concerning the Newest (or 'latest') Development in Gas Producing Ovens." This was followed by a paper on "Experiences in the Operation of Vertical Retort Ovens;" and then came one on "Additional Information with Great-Chamber Ovens at the Gas Works of München," Bavaria. This paper was very interesting, as the investigations had been made with the view to decide whether the city of Berlin—the city named is served by municipally owned works, *and* also by works owned by the Imperial Continental Gas Association—in rebuilding should erect benches on the vertical or the "Great Chamber" systems. The investigator (Prof. Drehschmidt, of Berlin) seems to have left the question on still debatable ground, for he concludes that the vertical bench is not the only one to show advantages, in that the "Great-Chamber" ovens have a few of their own. Prof. Bunte spoke of the work accomplished at the Association's experimental and testing works at Karlsruhe, and investigations made on behalf of said School of Instruction and investigations at the Berlin-Mariendorf and Zürich-Schlieren gas works, concerning results obtained and obtainable by the employment of vertical retort benches. All these papers and addresses were, of course, thoroughly discussed, and apparently *not* by the cut and dried method prevailing of late at some of our leading American Association meetings, hence were more interesting, if not more valuable, to those in attendance. Finally, the various "Commissions" presented their reports, which, supplemented by a few oral remarks by the respective chairmen, were accepted and adopted *as printed*. These reports, all very interesting, form food for reflection, besides giving much valuable information to be digested at home, not at the meeting. The reading of the Treasurer's and Secretary's reports came after the presentation of the reports of the commissions (or standing committees), then followed the elections. This method of proceeding has the certain advantage that members are not bored and worn out in the early part of the meeting, and enables those who do not care for the dry routine work of the Association to enjoy the technical programme and to "cut out," for themselves at least, that portion of the same, which, perhaps, not in Germany, but self-evidently in some of our American meetings, having been "fixed" beforehand, consequently is neither interesting nor profitable to a very large number of those who may wish to attend only the technical sessions. The Association elected Mr. E. Körting, of Berlin, to the President's place by acclamation, an honor well deserved, and the next place of meeting will be at the old, ancient and "free-Imperial" city of Frankfort-on-the Main. The evenings of the first and second days of the meeting brought with them informal gatherings at one of the places of amusement in the city; and after the conclusion of the congress, when the work was finished and well done, followed the banquet and excursion, which were enjoyed by some 1,200 persons in attendance at this beautiful reunion of "The German Association of Gas and Water Branch Men."—F. E.

CURRENT COMMENT.—

An odd accident is reported from Traverse City, Mich. Early the morning of the 10th inst., a spark from the stack of a locomotive hauling a heavy freight train set fire to a stock of tar amounting to 600 barrels, totally destroying the material.

A contract for the putting down of 100 miles of 20-inch screw pipe, to convey natural gas from Huntington, W. Va., to Cincinnati, O., has been awarded to Messrs. James G. Corcoran & Co.

Many electric arcs in the public lighting system of Indianapolis, Ind., have been replaced by improved Welsbach street lamps, and the end is not in view.

The Public Service Commission for the district has been petitioned by the proprietors of the Watertown (N. Y.) Gas Light Company and the Watertown Light and Power Company, to sanction the consolidation of the named concerns. The new concern is to be known as the Watertown Light and Power Company, and it is proposed to capitalize the same in $1,500,000. The existing mortgages are: Gas Company, $457,000; electric, $700,000.

The shareholders of the Citizens Electric Company, Keene, N. H., have agreed to an undertaking whereby it will be merged with the Keene Gas and Electric Company.

At the annual meeting of the shareholders in the Georgetown (Ky.) Water, Gas, Electric Light and Power Company, the officers elected were: President, R. W. Nelson; Vice-President and General Manager, S. S. Allen; Secretary and Treasurer, D. J. Hauss.

Tungsten Lamp Fallacies.

[Prepared for the Journal by Mr. H. Thurston Owens.]

Now that the tungsten lamp has become a successful commercial proposition, the estimated sales for last year being approximately 1 million against 80 millions of the older carbon filament lamp, it is the most talked of and best advertised device in use to-day. The reason for this lies in its efficiency, which is probably three times that of the carbon filament lamp. This efficiency is usually expressed in the terms of the number of watts required per horizontal candle power; in this case 1.25 watts.

When lamps are used for interior illumination this is not a fair rating, as the total amount of light produced for a given sum is that which the consumer pays for, and this is better expressed by the mean spherical candle power.

This rating, as compared with the more common method *i. e.*, the horizontal value—varies considerably. In the case of arc lamps the mean spherical candle power is often greater than the horizontal candle power, but incandescent gas and electric lamps have a higher rating in horizontal candle power, and the percentage of this value, when mean spherical candle power is used, is given in Table I.

Table I.—*Value of Mean Spherical Candle Power, Expressed in Percentage of Horizontal Candle Power.*

Carbon Filament.*	Tungsten.†	Upright* Mantle.	Inverted* Mantle.
8.25	76.3	75.9	91.5

* See *Practical Illumination*, pp. 27, 83, 91.
† See *Bulletin* (VI. B., Jan. 15, 1908) National Electric Lamp Association.

The tungsten lamp is rated at 1.25 watts per horizontal candle, which is equal to 1.64 watts per mean spherical candle; therefore, a 100-watt lamp, rated at 80-candle power, has a value of 61 mean spherical candle power. With current at 10 cents per kw. hour you can obtain 61 mean spherical candle power for 1 cent.

The above figures are based upon the efficiency as quoted in various bulletins, reports, etc., but they may not give these results in practice, and in evidence of this is the performance of its predecessor, the carbon filament. Only recently the result of a test of these lamps was announced where the average efficiency was over 4.5 watts per candle, and some ran as high as 15 watts per candle.

Another feature is the one of life which the manufacturers claim, but do not guarantee to be, 1,000 hours, or nearly 3 hours per night, average for a year's burning. In a recent installation of these lamps over 20 per cent. failed and broke almost immediately after being installed, therefore, the average life in this case was probably about 800 hours, unless the remaining lamps burned much longer than their makers had hoped. This latter figure is the average life guaranteed by the manufacturers in barrel lots. As 100-watt lamps cost $1.50 apiece, the renewal cost will offset mantle maintenance charges.

The cost of light from inverted gas lamps, as compared with tungsten, shows that such a lamp, consuming 3 cubic feet per hour, will give 54 mean spherical candle power. With gas at $1 per 1,000 cubic feet, you can obtain 180 mean spherical candle power for 1 cent, against 61 mean spherical candle power for 1 cent with tungsten lamps.

The gas consumer can, therefore, obtain illumination for one-third the cost of electricity, and, by paying an equivalent to the renewal cost of tungsten, can have his lamps maintained and regulated without trouble or annoyance. An installation of this style, in combination with upright gas arcs, is shown in Fig. 1. It is one of the Philadelphia installations of the Welsbach Company.

The cost figures as described above are given in Table II.

Table II.—*Showing Comparative Cost Tungsten vs. Inverted Mantle.*

Illuminant.	Consumption.	Rate.	Horizontal Candle Power.	Maximum Candle Power.	Mean Spherical Candle Power.	Mean Spherical Candle Power For 1 Cent.
Inverted mantle.	3 feet	$1.00	59	80	54	180
Tungsten.....	100-w.	.10	80	80	61	61

Intrinsic Brilliancy.—Comparing the two illuminants under discussion from quite another standpoint, we find that the mantle lamp has an intrinsic brilliancy of 25-candle power per square inch of surface, while the figures for the tungsten filament are 1,000 or 40 times

1. "Mean spherical candle power is unquestionably the fairest basis of comparison between various sources of light."—*The Art of Illumination*, pp. 3.6.

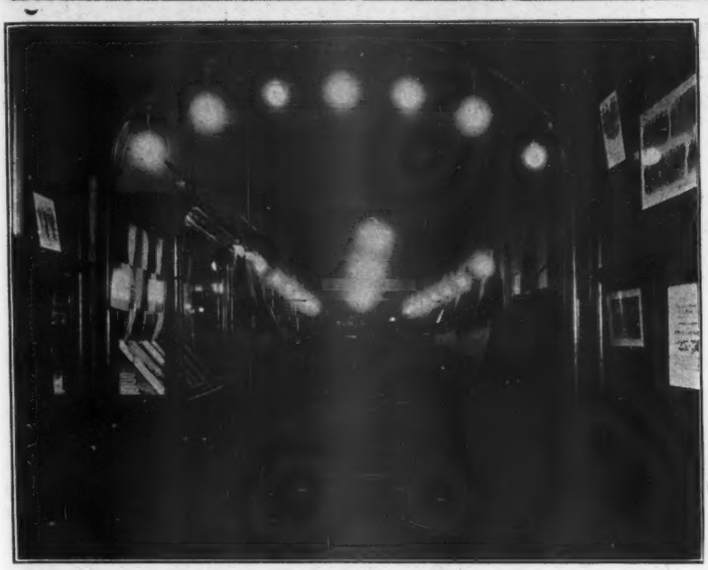


Fig. 1.

Fig. 3.

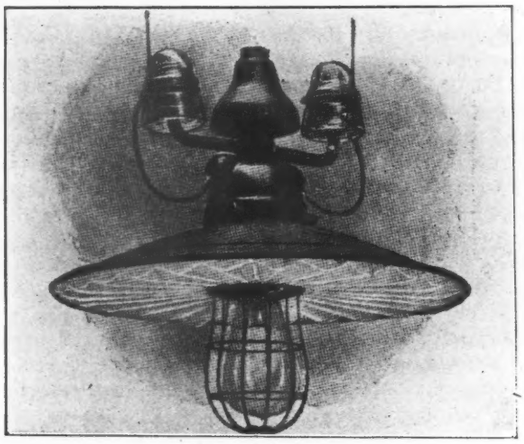


Fig. 4.

Fig. 2.

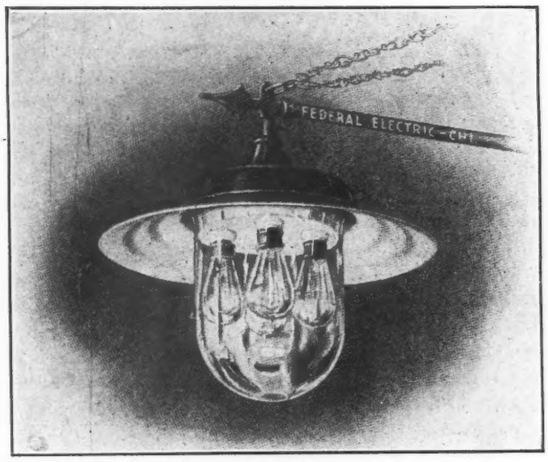


Fig. 5.

as great as the former. Mantle gas lamps should be equipped with suitable reflectors or glassware so that the eye is not exposed to the rays from the bare mantle; but if ignorant or careless persons should not take these precautions the damage to one's eyes likely to result would probably be much less in the case of these lamps than if tungsten lamps were thus used.

That the electric interests are not taking these precautions is at once evident from the fixtures being advertised in the trade journals reproduced herewith. The cluster lamp, shown in Fig. 5, is equipped with clear outer globe, and this is one of the fixtures put forward to replace lamps such as the one shown in Fig. 2. This latter is manufactured by the General Gas Light Company, and unless gas costs more than $1.50 per 1,000 cubic feet, and current can be obtained for 5 cents per kw. hour or less, the gas lamp will furnish more light for less money than the electric lamp.

The tungsten fixture shown in Fig. 3, is better than that shown in Fig. 5; but in neither case will any light be thrown upwards, and an unsightly dark spot over each lamp will result. Still another style

Fig. 6.

of mantle gas equipment is shown in Fig. 6, the ceiling cluster of the Ramsdell Inverted Lamp Company. In the art of illumination there have been wonderful developments during the past few years; but advertisers still make make absurd claims, one of the most glaring examples of which was given in a full page advertisement between the covers of a prominent electrical publication quite recently. The matter summed up showed the following state of affairs: Three 3-burner gas arcs were consuming nearly 5 cubic feet per burner per hour, and as the rate of gas was $1.40 per 1,000 cubic feet, the total cost was $67.69, including maintenance for 1,000 hours.

This installation was replaced by twelve 40-watt tungsten lamps at a total cost of $52.96 for 1,000 hours. The answer here is that the total mean candle power was reduced from 450 to 293 and the price for 1,000 mean spherical candle hours increased from 15 cents to over 18 cents.

If this same consumer had installed 6 inverted mantle lamps at one-half the initial expense, he would have had 324 mean spherical candle power, and for 1,000 candle hours the expense would have been less than 12 cents against 18 cents for the tungsten lamps, or 11 per cent. more light at a saving of $24.76 for 1,000 hours. Another investigator has given the relative values of mantle and tungsten lamps expressed in effective lumens or the percentage of the total luminous flux upon the counter level, and in so doing has credited the electric lamp with a greater efficiency as installed. That is to say, that the electric lamp can be equipped with suitable reflectors so that a greater proportion of the total light can be made available on the counter level than is the case with gas lamps. The answer to this argument is that, even if the tungsten lamps were equipped with another type of reflector, which is 20 per cent. more efficient than the style quoted, the cost of illumination by means of inverted gas lamps without reflectors would be less. The question of reflectors brings up another point which is greatly in favor of the gas lamp, and this is, that, owing to the fact that the greater percentage of the light is thrown downward, the losses from reflection will be less.

Street Lighting.—When comparisons regarding street lighting are made, the electric interests put forward an equipment something like the one shown in Fig. 4, with a 50-watt lamp to furnish an illumination equal to a mantle gas lamp. The only lamp which is given a value approximating the mantle gas lamp, by city engineers, is the 75–81-watt lamp, and in order to compete in price, the electric light company will have to sell current at less than 6½ cents per kw. hour, and out of this amount provide for line losses, inspection, repairs, breakage, superintendence, etc.

The maximum value from a light source can only be obtained by proper location of the units, suitable reflectors and fixtures which add to the attractiveness of the installation. In order that these results may be obtained a knowledge of illuminating engineering is necessary, and that is why it is an important, even though an undeveloped, branch of our industry.

[Official Report.—Continued from Page 50.]

PROCEEDINGS, SEVENTH ANNUAL MEETING, WISCONSIN GAS ASSOCIATION.

Held in Milwaukee, Wis., May 14 and 15, 1908.

Second Day—Morning Session.

Speech by Mr. H. L. Doherty on State Regulation of Lighting Enterprises.

The Vice-President—A number of years ago the Solvay Process Company was trying to get a franchise in Milwaukee, and some of our friends from the outside came in to help us, and the attorney for the Solvay concern remarked, "Why, here is a gentleman who has come all the way from Madison to tell the people of Milwaukee what to do." Mr. H. L. Doherty has come all the way from New York to tell us what to do, and I am sure you will be interested in what he has to say. [Applause.]

Mr. Doherty - I have been asked to talk on the present day tendency of rates. I am sorry to say I have been unable to prepare a set paper on this subject, or rather I have been unable to prepare anything that I would care to present; but I have some very decided views in the matter, and I think some of them are views that you would at least like to hear. I believe that the agitation and antagonism that have been sweeping this country against corporations, have resulted in the rates charged by many corporations being lowered to a point that is not properly remunerative—simply the agitation, the threat of competition and of trouble has induced many companies to bring their rates to a point where they are not properly remunerative. In this movement, which has produced an intense feeling against all corporations, naturally the quasi-public corporation, on account of its direct dealings with the people and on account of its prominence in the public eye, has been first to be affected by this campaign. As I see it now there is not likely to be any abatement in this campaign, unless the corporation side can be presented to the public in a way which will appeal to them. I believe the present tendency towards State regulation of these corporations will do much to present the other side. So far but one side has been presented to the public. The newspapers have continually sided against the corporations, because that was popular with the public, and the latter are very much in the condition of the juror who said he did not like to decide a case when he had to hear both sides, adding that if he only heard one side, it was all simple enough. Now, the public, having heard just one side of this controversy, believe that corporations are thoroughly bad, and that the quasi-public corporations are the worst of the whole lot. More of the apparent shortcomings of the quasi-public corporations have been pointed out to the public than of the ordinary corporation, and any act on the part of any corporation can generally be construed as an act prejudicial to the public. We have gone through a period in which the corporations have been held up to all sorts of threats of regulation, municipal and State competition, public control, and everything of that sort. During the last 2 years it has been almost impossible for many of our quasi-public corporations to finance the needs demanded of them by the public. The public have not studied the thing below the surface, and have not stopped to realize that if they rob these corporations intentionally, rob these corporations of their credit, the latter are not in a position longer to serve them, and the past 2 years we have seen examples of this, where the railroad and transportation companies of the country absolutely could not secure the necessary funds to expand their facilities as demanded by the public, and no doubt the railroad companies have been materially injured by their inability to expand and take care of the business that they might have had. Yet, I venture to say that, for every dollar the railroad companies have lost, the public has been the loser $100. I think the first thing we must make the public understand is that the interest of the corporation and the interest of the public are identical, at least in the main, and that the only difference is the difference as to what shall constitute proper service and proper profit. One of the best examples I know of that has occurred in this country in years, whereby the short-sightedness of this campaign against corporations can be illustrated and its lack of wisdom clearly shown, is that of the beef corporation. If you remember, a few years ago a decided movement was started against the beef corporations, mainly on the ground that their operations were uncleanly and unsanitary. A few years before we had had a similar agitation at which time the Government took the matter in hand and appointed inspectors. Later on we again had a campaign against the beef trust. Nothing was stated about these government inspectors, but if the many sensational charges made by the press were true, it simply demonstrated that, in that case, federal control or inspection had only served as a cloak to enable these people to do as they pleased, and instead of being compelled to maintain proper conditions for the sake of having a good reputation, they thought, "Well, we are in the position of being mistrusted anyhow, and the mere fact that the Government has put inspectors into our plants is to day a sufficient assurance to the public that our operations will be properly carried on." No matter whether these beef corporations were doing all that was charged in the press or not, the fact remains that they were held up as conducting their operations in such a way as not to deserve the support or the patronage of the public. A good portion of all the wealth of this country has been created by the exportation of beef to foreign countries. Naturally in all of these foreign countries there is an element extremely jealous of all the Americans, and they are particularly jealous of any American goods sold in their country. This agitation (made as dramatic and as widespread as possible, and given great publicity) was used by these people in foreign countries as an excuse for passing laws which were primarily intended to keep American meats from the foreign markets. The agitation in our newspapers largely curtailed the home market, reducing it to a minimum. The class of the public who are always crying out most against corporations were overjoyed to see the trouble and the loss they had occasioned to the beef trust, but they entirely overlooked the fact that while the beef trust were the ones primarily to reap the profit from this exportation of beef, the fact remained that the country as a whole reaped that profit, and that campaign in a measure fell first on the beef trust, then on the large ranchman, and gradually went down the line to the small farmer, until everybody was injured by it. Now, it could be very easily shown that all of these attacks on all of these corporations in a measure react on the public in the same way that the attack on the beef trust reacted on the public. It is rather a difficult thing to talk about educating the public and making them see the corporation side of the argument. They believe that all corporations are bad, so it is not a question of starting out with people who want to learn, but rather with people who believe they know the subject better than we do. In all of this campaign it

seems to me the American people have entirely overlooked the theory of the corporation, and I want to repeat what I have said right here in this same hotel before, because I know of no different way of saying it, and sometimes it is harder to find a different way of speaking about a thing which is a common fact, than it is something which is removed from a very simple fact. No doubt the theory which gave the corporation birth was the desire that every man should have an opportunity to invest his money on an equal plane with everybody else. We can readily see that some enterprises require immense sums of money for their successful conduct. That is, there are natural laws, like the division of labor and matters of that sort, which demand that certain enterprises shall be carried out on a large scale to secure the best economic conditions. That is true of the ordinary gas company. You could not have a number of little gas companies in different sections of a city serving a community, and hope to get the same economic results as with one large gas company and one common distributing system. Now, if we were not permitted by law to combine our capital, these large enterprises would be open only to those men who have sufficient means in themselves to carry them on. The large enterprises would naturally exceed in number the men capable of providing the capital for them, and for that reason there would be no competition, because no one would care to compete in one certain field which was already occupied, while numerous other fields were not occupied. They would naturally take the field that was not occupied, and, for lack of competition, these men possessed of great means could make these enterprises as profitable as their greed might dictate. No doubt the theory of the corporation was this, that the man possessed of great means did not need any legal right to combine his capital with others; and he does not. The matter of the legality of co-operating with capital, under what we term the ordinary incorporation act, is not essential or even necessary to the man of great means, but it is necessary and is very essential to the man of moderate means; and no doubt it was the intent of the law that any number of us could get together, pool our capital and provide for its direction in any way we saw fit, so that we could put our capital on a par with that of the man of great means, and every enterprise, from the smallest to the largest, would be open to us, whereas, without the co operation afforded by corporations, only the smaller enterprises would be open to us. It was intended that the large and small enterprises should be open to all on equal terms, and without any distinction whatever. The public have not stopped to analyze what the word corporation means, and have assumed that the corporation is a thing created primarily for the rich man; they assume, to start with, that the rich man has acquired his means improperly, and that he is a man who deserves no protection from the law; that he does not even deserve justice. They will tell you that in the abstract, he does, but if you talk with them a little while they will soon show you they do not believe he is deserving of any consideration whatever. There may be fault in my reasoning, but it seems to me the explanation I have just made is very logical, and I think it can be clearly demonstrated that the corporation is the means whereby the man of small and moderate capital can be put on a par with the man of great means, and instead of the public wanting to tear down our corporation system, instead of their wanting to harass and discourage the extension of the corporation idea, it seems to me that to recover from the ills of which they complain, be they small or great, we want an extension of the corporation idea rather than a curtailment of it. There is so much that could be said to the public, had we the means of saying it, and if all the corporation men were ready and had studied the matter out so that they could preach the gospel, that I believe we would find a great element of the thinking people of this country who would look on corporations in a vastly different light than they have ever been looked on before. That refers to the general attitude of the public to the corporation. We gas men are facing another problem. We are facing the regulation of our rates and earning power by a State commission. Originally we were threatened with municipal opposition. The tendency seemed to be on the part of the public to have municipalities start their public utility enterprises in competition with ours. This was done in a number of communities, especially in Austin, Tex., and it nearly bankrupted the entire city. If you will get Mr. Francisco's book on municipal ownership, you will find examples given from nearly 100 cities, I think, or perhaps more, of the failures of municipal ownership. As this tendency for or advocacy of municipal ownership was given wider publicity, the public began more and more to give it their thought and study the results being secured from the operations of these various municipalities. Chicago has had a municipal street lighting plant for a number of years. The claim had been frequently made that these lights cost approximately $40 per year. Many statements of that sort were made by many municipally owned plants, and were allowed to go unchallenged. When this advocacy of municipal ownership became of such great importance, many people concluded they would like to see the true results being secured by municipal operation, and an investigation of these municipal operations proved in almost every case that municipal operations were far more expensive than private ones, even though the private operations meant a considerable profit to the private enterprise. Naturally the men who were prompted in the least degree by the desire to hurt corporations, and in the greatest degree to do simply that which was best for the public, ceased to advocate warmly the adoption or the extension of the municipal ownership idea, and many of these same men then said, if municipal ownership is a failure we must have public regulation, and I think the advocacy of public regulation, which is now almost co-extensive with the country, has been produced primarily by the many converts to the idea that municipal ownership cannot be made a success. To what extent the public are wrong and to what extent the corporations are wrong I do not know; but as a rule, where a controversy comes up between any two people or classes of people, you can generally feel sure that both are to blame in a degree. The public are of opinion that our profits are unwarrantably high, and that they are suffering from many ills that might be cured under municipal ownership or public regulation. Therefore, they have established the idea of public regulation, especially as exemplified in the interstate commerce commission, or the Federal commission for the control of interstate railroads. Massachusetts has a Board of Gas and Electric Light Commissioners who control the gas and electric companies of that State. In New York State there are two Boards, one for the cities outside of New York city, and one for New York city alone, which Commissions have control of the various quasi-public utilities in the State. In Wisconsin a bill has been recently passed which put the gas and electric companies of this State under the control of the Railroad Commission. I think the public look on the establishment of these Commissions primarily as a method of rate cutting. That is, they are firmly convinced that our profits are unwarrantably high, and they believe that all the Commission need do is to send for us, examine into the profits that we are making, and immediately order a heavy horizontal discount in our tariffs. The truth of the matter is very different from what the public expect, and this I think they will learn through their Commission, and I think when they so learn of it, and through an impartial board appointed to act primarily for the State, and when the board tells the public that the profits from this business have not been high, and in many cases have been wholly inadequate, the people will believe and accept it readily, where they would not accept the statement if it came from a body like the Wisconsin Gas Association. They would say we were prejudiced, and it would be impossible for us to give them this knowledge in any way that would appeal to their faith and not make them think they were being tricked. The truth of the matter is that few, if any, of the quasi-public corporations of Wisconsin are making more than an adequate return on the amount of money actually invested. It is also true that great numbers of them are not making a proper return; they are not making as much of a return as they should have. This has been due primarily, I think, to the reason I spoke of in opening my talk. The continual agitation and threats on the part of the public, and the harassment experienced by these various companies, which have induced them to lower their rates to a point below what they were really warranted in doing; but they did this with the idea that if they could satisfy public clamor and establish good relations with the public, sooner or later they will be in a position to make a proper return, and that a present sacrifice was perhaps the most desirable thing for the stability of their enterprise in the long run. Another thing which contributed to this very largely is the fact that during the past 15 or 20 years the exploitation of gas and electrical properties has proved very profitable to some people. The result of the profit made by these exceptional few has induced large numbers of men to go into the exploitation of these various properties. Many of them have come into it without a very definite or very exact knowledge of the business, or not a knowledge of the business based on long experience. They have purchased these properties, have run them with the idea of making them show the greatest profit possible, often without regard to the maintenance of their property, and many things of that sort. Many of them have believed it was only a matter of time until they could develop their market to such an extent that the appreciation in value of their prop-

erty would more than offset any actual physical depreciation or lessening of the value of the investment due to the inadequacy of the plant or due to the plant or its apparatus becoming obsolete, and to a degree they have been right, because we have seen the value of these properties increase and increase very rapidly. There was a time when quasi-public securities, except in the big cities, were looked upon in the same way that brewery or foundry securities are looked upon, and you had to sell them on the basis of 10 or 12 per cent. earning capacity. As this movement went on, more and more people became interested in the quasi-public corporation business, especially the gas business of the country, and the securities of these corporations commenced to sell on a basis nearly approaching that of the steam railways. The steam railways were able to sell their securities on a 4, 5, 6 or 7 per cent. earning basis, depending on whether it was an underlying bond or an overlying stock. In comparing the intrinsic worth of railway securities and quasi-public corporation securities, I think it could be plainly shown that the gas securities of this country have proved more reliable, safe and secure than the railroad securities of the country, and necessarily if the public can be made to see that gas securities have proved the safest investment of any of the numerous investments offered them, they will naturally put such securities on a more favorable basis than they have been heretofore, and as the people have to a greater degree become convinced of the value of these securities, the market for them has been wider and on a better basis. During the past 2 or 3 years this agitation against quasi-public corporations has become more marked, and we have seen the quasi-public corporation securities change from being in an extremely favorable light with the investing public to a light where they are not so favorably held, and whether this tendency to force the sale of these securities on a bigger, rather than a lesser, rate of return will go on, or whether we will go back to our favored position, I do not know. But I do believe that we primarily should show our willingness to thoroughly co-operate in this demand of the public for government regulation. I think any effort to prevent successful State regulation will be taken by the public as conclusive evidence that we are not willing to go before an impartial tribunal, and that we are not simply asking for justice, but that we are asking for something more. For such reason alone I think we should disarm ourselves and should take up the question of public regulation with just as much enthusiasm and spirit as the public themselves have shown their willingness to do. I just want to point out one or two advantages in this course. I have already stated it was my belief that these corporations were not making anything like the return they should, that by means of these commissions this can be made plain to the public, and it can be given to them in such a way that they will understand and believe it. I also want to call your attention to what happened in Massachusetts. A great number of years ago a Gas and Electric Commission was established in the State of Massachusetts, whereby the gas and electric companies of that State were placed under the control of this Commission, which could limit the earning power of these companies, could fix their rate, and could do many things, and, in fact, about all the things that can be done by the Wisconsin Commission. At the time the Massachusetts Commission was established, gas and electric securities were not held in particularly high esteem by the investing public. As it became evident to the public that these companies would not be subjected to unfair competition, and it was not the desire to do an injustice to the companies, but is simply intended to compel the companies to do justice to the public, the investing public commenced looking on the securities of these corporations with a great deal of favor, and each year they sold on a more advantageous basis; it became easier for those corporations to raise the necessary funds to extend and develop their properties, and up to the time that the first preliminary changes commenced taking place, which preceded our recent panic, the quasi-public corporation securities of the State of Massachusetts were selling on a more favorable basis, probably, than any other class of securities in the whole market, not excepting railroad securities, which have always been held by the public as the best of all investments, other than government and municipal bonds. I think we can look for the same thing to take place in the State of Wisconsin. For the immediate moment it makes our investors apprehensive; but later on, if the Commission carry out their work in the same spirit in which it has been begun, and with the degree of fairness which now characterizes their work, and if this policy is carried out, as it doubtless will be, we can look for history in Wisconsin to be the same as it was in Massachusetts; that is, we may look for an appreciation in the value of our securities, and in many ways it will be easier for us to finance and conduct and operate our properties. Public regulation is not a thing which is all one-sided. If it is conducted fairly and impartially, the companies, I believe, have just as much to gain as the public. I believe it is possible for public regulation to both benefit the companies and benefit the public. Now, getting back to the question of rates. The gas business, even aside from any pressure on the part of the public, shows a history of constantly diminishing charges for gas. These diminutions have been made frequently, simply as a means of developing the maximum earning power of the company. I have often illustrated the rate problem by saying that if the gas company were to attempt to charge $10 per 1,000 gas, they would become bankrupt, because nobody would use it. And regardless of the heavy profit above operating expenses per 1,000 cubic feet of gas, that entire profit would not take care of the necessary fixed charges. On the other hand, I have said that if the gas company tried to sell gas for 1 cent per 1,000 feet it would also become bankrupt. One rate would be too high and one rate would be too low. Now, somewhere between that 1 cent and $10 per 1,000 feet, lies a point where maximum earnings will be realized. The gas companies have been anxious to find this point; and I think, as a broad, economic proposition, that the point which yields maximum earnings is the point which is of greatest interest to the company; but however that may be, the present tendency is to diminish the price of gas and current, so the gas and electric companies will not make more than a fair return on the value of their property, and that is the problem which really faces the Railroad Commission of this State. In determining what is a proper return, we have a problem which may look simple to the man who has given it no thought, but to the man who has, it looks very complicated, and if it appears as a simple problem to anybody, that is the man who should be on the floor talking instead of me. I do not know who that man is, or I would willingly resign the floor to him and let him present the subject to you as he sees it. But I think in the past few years we have allowed ourselves to be put in the same position as the gambling house or other business which is run contrary to law. We have been dodging and compromising and doing everything to keep the public off our backs. We have all felt that that was necessary. After giving this subject very close study, both in view of the adoption of public regulation in Wisconsin and and also the adoption of public regulation in the State of New York, I am pretty well convinced that we have nothing at all to fear. I speak now for the great majority and not perhaps for a few exceptional cases; but for the great majority we have nothing to fear. I believe, in the first place, that we are going to get fair and liberal treatment from the Railroad Commission of Wisconsin, if we know how to present our cases to them intelligently. We are all more or less in the same boat, I think. I confess I do not know how to answer these questions, in spite of the fact that I have spent nearly 26 years in this business, have had excellent opportunities for observation and have had the advice of the best and biggest men in the business. I think we should all sit down to think these matters over seriously and discuss them. I was interested greatly in the paper presented by Mr. Dickey on the question of the care of consumers' meters; and that paper was an excellent sample of the generosity of the manufacturer, who tells us how to repair our own meters, in spite of the fact that it was long the policy of the manufacturers to keep the matter to themselves, so it would be necessary for the gas companies to send the meters to the factory if they needed repair. But that paper was very desirable, very interesting and one we will find great use for. But the important thing to us is the general corporate interests of our companies; that is paramount and should be given consideration over and above everything else. To determine a proper return on these properties requires, first, the establishment of what the value of the property is. Then we must determine what is going to be required to maintain that property; and we must take into consideration the risks of the business and matters of that kind. Then, what a proper interest charge on the money invested is must be decided, for there is no profit until a man has first received the same interest that he could get from his money if invested elsewhere safely; and then the profit must be determined after these other things have been taken into consideration. In getting at the value of the property, there alone you strike an extremely difficult problem. It is doubtful what you should allow for it. Many of the things that have gone to contribute to the cost of our properties are no longer in evidence, and yet they were a necessary part in building up our business; and whether these should be allowed for or not is a matter which is at least debatable—perhaps not from our standpoint, because we say they must be allowed for; but other people can debate them and say they should not be allowed for. The question of building up

a going enterprise and valuing it after it has been built up, is an exceedingly difficult matter. Suppose there was a water power property at, say, near Milwaukee, and a group of us should attempt to build a hydro-electric power plant and transmit power to Milwaukee. Now, we will assume that our engineers would say to us, the site of that property can be bought for $60,000, and it will require $900,000 to put in the physical apparatus, complete and ready to run. In the present temper of the public they would say that we should pay $60,000 for that property, that we should put in the other $900,000 required to build the property, and that when we had gotten our whole $960,000 in, that the property was only worth $960,000, and that we should only be allowed to earn 6, 7 or 8 per cent. on $960,000. It is my opinion that the man willing to take the risk of starting an enterprise of that sort does so with the belief that he can take $960,000 and put it into that property and make that $960,000 worth vastly more than $960,000. I also think, with the many excellent opportunities offered for investment throughout this country, Mexico, Canada, South Africa, and many other places where a man can invest and invest safely (and I am sorry to say I believe an investment in Mexico and Canada in many ways is safer than it is in the United States), that the opportunities that present themselves to the man with the ability to raise that money to invest it elsewhere, I say that he is very foolish to put that $960,000 into this water power plant in the State of Wisconsin, with the idea of transmitting power to Milwaukee, unless he believes that, when he has taken all of these risks and has successfully overcome them, his property is worth at least $2,000,000. If it is not, he can find better things to put his money into elsewhere. When we go to value the properties which have been built in the times gone by, in most cases they represent a successful enterprise, an enterprise which may for years have been unsuccessful, which may have been dragged along at the greatest hardship to the owners, but have eventually become a successful enterprise; at any rate these enterprises were put in in good faith, with the idea that we would not only be allowed to reap a profit on them, but be allowed to earn a fair return. You can take any quasi-public property in Wisconsin that you choose, and if that property were left to go ahead without regard to any State regulation, city regulation, or anything of that sort, if it were allowed to charge the maximum amount that it could charge for service and still do business, and it were insured that right in perpetuity, you would find that that property had not appreciated as much in value as some of the real estate in that very city. When you and I go seek a community in which to build up one of these quasi-public undertakings, we try to select one that will grow and prosper. If we cannot be allowed to earn any profit, or a fair rate of return, on the money we put in, we are very foolish to put it in the quasi-public enterprise, because if we have made a proper selection of the city we can buy real estate almost blindly in that city, or we can buy any real estate in any part of the center of that city, which real estate is bound to appreciate more than any appreciation we will have realized on any of these quasi-public corporations. Throughout this State there are a great many small cities, the growth of which cities depends primarily on their ability to have conveniences and comforts that are not enjoyed in country life. The only reason that a city lot representing one-seventh of an acre may be worth $50,000, while the same kind of dirt some place else is only worth $100 for a full acre, or $14 for the area of a lot, is the opportunities it presents, primarily due to the quasi-public and municipal service of that particular community—sewerage, water, gas, electric light, and matters of that sort. Nothing so contributes to the growth, prosperity and enhancement of wealth of those cities as the liberal conduct of the quasi-public utilities or the advantages furnished by the municipality, like sewerage. Failure to furnish those various advantages means that the city cannot grow; and these quasi-public corporations can be a great factor in the growth and prosperity of these communities; they can either retard or accelerate their growth by anticipating the needs of the community or failing to do so. The public unfortunately believe they are interested only in squeezing our price down to the very lowest mark; and I am sorry that the majority of the public do not care what the rate is, just so that we do not make money. The truth of the matter is, while we are selling a commodity they are buying a service, and for that reason we might be able to sell at a very high rate, and yet, by proper service, by proper attention to our consumers, by giving them the advantage of every convenience and every method of enhancing the value of the service in relation to the quantity of the commodity bought, we could perhaps serve them very much better at a high rate than we could at a low rate. In fact, there is nothing so disastrous to the very things in which the public are interested as getting the rate too low. If you go to the city where the rates have been crowded down too low, you will generally find you have a service not complete from a geographical standpoint; that is, there are people in the city who cannot buy gas or electric service at all, or have not got street railway service. I know a great many people object to paying $1.25 per 1,000 for gas, or 5 cents for a car ride, and object to paying 15 cents a kilowatt hour for electricity; but it seems to me any section is vastly better off which can have these conveniences at these prices than not to be able to buy them at any price. I can illustrate that best by taking the example of my mother's house in a central Western city. She lives in a beautiful residential district, but it has been only recently that that district has been served with electric current. During the summer it is quite hot there. She was very sick one summer, and I wanted fan service for the house. I would have been willing to pay $50 a month for that service, but could not get it at all, because the electric company was not giving the city full service from a geographical standpoint, and was not giving the city full service in that respect primarily because the city had demanded rates which were too low to warrant extensions into the outlying territory. The public no doubt applauded these efforts and thought they had done a proper thing in lowering the rates, but in reality they had injured the city by crowding rates too low to enable the company to properly serve the city. On the other hand, I am sure that Prof. Burgess' investigation will bear out the statement that good service is of vastly greater benefit to the public than low prices. By getting together with the representatives of tke Railroad Commission, and talking the matter over among ourselves, we can determine the greatest number of candle power hours that we can give to the public for $1, and at the same time make a fair return to ourselves; and I believe it is possible to increase our present earnings and yet serve the public better. Saying this I realize some of you may object to the statement; I should not say it for all of us perhaps. Yet I can say it for myself; but in some cities where I am interested the company has been prevented from giving proper service by inability to make the public appreciate what they themselves ought to have. We have two peculiar classes of people to deal with in municipal affairs—I am going to talk plainly to you here—and those two classes have been largely responsible for the shortcomings of the ordinary quasi-public corporation. The first class is a municipal officer who holds you up, as it were, with the hope of monetary reward; and I can give you a little example that occurred just a short time ago in the northern part of a bordering State where I am interested in an electric light plant. We were asking for extensions, or rather the public were demanding extensions, in a certain district and we were very willing to make these extensions. We had to apply to the City Council for them, and did so apply, and in a most subtle way we were given to understand that those extensions could be secured in a certain manner by seeing certain people. I took the matter up personally, and said that we would not make the extensions if we could not get the franchise without buying it. I did, however, insist on taking the thing up in the City Council, and being turned down; and three of the gentlemen of that Council turned us down with the greatest grace in the world, receiving the almost unanimous applause of the entire public for the way in which they had guarded (?) the people's rights. They undoubtedly thought I was too stupid to understand how we could secure that franchise. To the next group of men who wanted favorable action the method was made plainer, and they made it so plain that they were requested to come back to-morrow, and then these men had witnesses behind a screen, and these politicians told them exactly how business could be done with that particular city. [Laughter.] Just now these three gentlemen, who so beautifully turned me down and received almost the unanimous applause of the public, are now under indictment for bribery and a few other charges like that. The public for years stood ready to applaud the public official who would harass and antagonize corporations; and it has been this ability to secure the ready applause of the public which has prompted these men to do a great many things which were prejudicial, perhaps, primarily to our interests, but to a greater extent, measured as a whole. to the public than to us. The first element I have just described is bad enough, God knows, but I have often wondered if they do the great harm done by a certain other element that we find very generally in politics. That is the element who continually want to be kept in the public eye and continually want to make the public believe that they are defending their rights and are there to prevent the aggressions of this corporation and that corporation and this and that moneied interest. I refer now to the man who is pretty much of an agitator, the man who would go to work and pass an ordinance providing that the company which was selling gas for $1.50 should sell it

for $1.30, and who would be sorely disappointed if the company, before he got a chance to swing his campaign, actually cut the price to $1.25. He does not want $1.25 gas; he wants agitation, and he is going to have agitation; and I could mention other cities, and one particularly in the Middle West, where the company has repeatedly acceded to various demands simply to avoid litigation and trouble, thus creating unfavorable newspaper notoriety—where they have gone in and tried to concede almost anything for the sake of avoiding that; but no matter what they would have offered, these people would have insisted on keeping up the agitation, simply to show the public that they were the true trust-busters and corporation-baiters. That is one of the elements in municipal affairs that makes us welcome State control, that makes us welcome the creation of a body who has the time and can give the subject the proper consideration that it deserves. I believe that that element in municipal affairs has been a great factor in injuring the public, and I often think of Lincoln's remark, "You cannot fool all the people all the time;" and so let us hope he is right. If the public could see these men who in their true light have so universally appeared throughout the country as trust-busters and corporation-baiters, I think every citizen would be more or less humiliated. But, getting back to the question of valuation again, I have drawn one example where we have a water power plant, where we have the possibility of creating an enterprise out there, if we can find anybody with courage to put the necessary $1,000,000, or what is assumed to be $1,000,000, according to our engineer's estimates. Now, in reality, if you were to take up that enterprise you would find that it was a vastly different proposition from simply advancing $960,000. You would first find, perhaps, there was some little dispute about your titles, you would find there was a little tangle with the government, that some fellow thought the stream was navigable, and perhaps after you bought the property you would be tied up in litigation for 2½ years, or something of that sort. Then, when you would start to build your property, you would strike many difficulties. You would be delayed in your time; perhaps your contractor would fail on you; certain foundations would be insufficient, and you would find that you had omitted a great deal from your estimate. And while you would figure originally that you could build that property for $960,000, and could complete the whole thing in 1 year, you would probably find it had taken you 3 years to do the work, and, instead of spending $960,000, you had spent $1,920,000, or double what you thought you would spend. That sounds exaggerated, perhaps, especially when you talk to engineers, for they maintain that their figures are always to be relied upon; but the fact remains that the only men who can be relied on to judge these figures say they could better afford to pay 50 per cent. more for a completed property than to take it on what seems to be the cost of building based on engineering figures. This is not due to the errors of the engineers particularly; it is due to all sorts of things. It is due, among other things, to what is generally termed in that class of work, acts of God, floods, fire, lightning - anyone of a number of things. Now, when we start to value properties that are already built, the only way we can go at it is to go at it just as if we were going at a new enterprise. We can take these properties and estimate what it has cost to build certain portions of them. In this particular case, when we get through our figures are just the same as though we were estimating on a new property, except for the question of omission. We know we have not omitted anything necessary to make that a completed property—that is, anything of any great importance; and yet, as Mr. Pence, of the State Commission of Wisconsin, wisely said at one time, why, of course, every time a new set of valuation experts go over a property, they will find something was omitted from previous inventories. So, no matter how many times you go over a property, you will always find something that has been left out. But this would be small compared with what might be omitted from a new property which it was proposed to build. In the case of the Madison Company, in which I am interested, various means were used for estimating the value of the property. I used one method, and just as an indication—I am not going to tell you all of the difficulties that surround the making of a proper estimate for a property of this sort, but I am going to tell you some of the things that interest me in fixing a value on the property that I consider the actual value of the tangible property of the enterprise, and without any allowance for franchise, goodwill and things of that sort. In this matter of goodwill I want to say that that is a greatly abused term, and I also want to point out the difference in the public mind between the value of an ordinary business and that of a quasi-public corporation business. The quasi-public corporation which is operating on a franchise is generally believed by the public to have a certain value for its stock and bonds which greatly exceeds the physical value of the property. They assume that all of the difference in value between the physical property and the value of the securities issued on that property is represented by the franchise. That is not true. Every business, if it is a successful business, has a value far, far beyond the value of the physical assets of that concern—far beyond. All that difference is represented by a number of things. It is represented by having an organization of skilled workmen, by having a property that is capable of doing what it was intended it should do, and many other things, and many properties are never able to do what it was intended they should do, without expending a vast sum of money which does not represent the acquisition of additional physical property. So there are these many things, goodwill, organization, this, that and the other thing, which go to make up a great difference in value between the physical assets of that corporation and the total value of that enterprise. Now, all of these things play a part in the quasi-public corporation, just as they do in the private enterprise, and in addition to that the quasi-public corporation has its franchise; but it is erroneous to believe that all of this difference between the physical value of the property and the total value of the enterprise is represented by franchise alone. Take a small example that occurred to me while I was discussing this matter of the value of the successful enterprise in comparison with its physical worth. If you would go to the people throughout the city of Milwaukee who have established successful business enterprises, whether it be a drygoods business, a cigar store, a barber shop or anything else, I think you would find that few of those businesses could be bought unless you would pay more than double the value of the physical assets. I also think that the average man would be willing to sell out his property, if it is a successful property, at double the value of the physical assets, with the hope of establishing another business and selling that out. I think in the end, however, that he would wind up with much less profit than by keeping his business, even though somebody stood ready to pay him double what the physical assets were worth, and I think that is true in our case. Let us assume that we take an inventory of a gas property, anyone of your properties, and that we give the real estate and physical property a value at what they then seem to have, in view of used condition and matters of that sort. Those represent the first two items of my valuation, and then are what I term "omissions." I assume that, with an ordinary inventory of a property, 2 per cent. of the entire value will be omitted. I also assume there is nothing there to show for the engineering and supervision work, and that this work will represent not less than 5 per cent. of the entire physical value. Then I also maintain that what we would put into our engineering estimate as contingencies will amount to at least 10 per cent., because parts of the work have cost vastly more than an engineering estimate would estimate they should cost. Next we must add the legal expenses while building, and I want to call your attention to the fact that many items like that which are ordinarily purely intangible, are a contribution to the tangible value of the property, and are inseparable from that value of the property. That is true also of matter like insurance while building, which covers public liability, employer's liability and fire insurance. In most of these enterprises we have had to construct the property piecemeal, and, therefore, could not secure the same economy that we could secure if our properties had been built entirely at one undertaking, yet, had we attempted to build the entire property in advance of its needs, and could properly prognosticate what we should need, we would have lost a vast sum, due to anticipating the needs of the community too early, and have a constant running interest charge on that portion put in advance of its need, or else we would have made mistakes in attempting to prognosticate the needs of the future and would have spent money that was not warranted. Therefore, in spite of the fact that piecemeal operations require a greater expense, at the same time it is cheaper to build piecemeal than it is to attempt to build and anticipate the needs of the future community. So in this particular case I have shown that the minimum cost of piecemeal construction over continuous operation would be at least 10 per cent. Now, we have to add the interest on the money during the time the property is under construction, and that could be argued as an intangible item, yet it is an absolute contribution to the physical value of that property. I hold there is a certain excess in value of the assembled property over and above the cost of the units which went to make that complete property, and I think the best evidence of that fact is that if to-morrow you were to go to the only class of people that deal in and are able to buy enterprises which would require the investment of a million dollars, and

would say, here is a water plant out here near Milwaukee that we can build for $960,000, I am quite sure that whoever would buy that property would more willingly pay $1,500,000 for that to be brought to him as a completed property, with the wheels turned over, and it being demonstrated that it was adequate to supply the needs of the community, to say nothing about making it a going proposition, or building up a business, than to pay $960,000 for the enterprise and then construct it. That is, if someone else would advance all the money and take all the risks of these acts of God, etc., that you cannot protect yourself against in a contract with a contractor, and then should go to the only men who are capable of passing on the value of the completed property over its individual parts, those men would testify without exception that they would willingly pay 50 per cent. more for the completed property rather than take not only the risks but the delays of building. Let us take the case as it really exists. Many of the people who build this class of property have an organization that costs them $100,000 a year to run. Now, unless they can make good profits on a small amount of capital, or even a large amount of capital, they cannot possibly hope to make their operations as a whole successful. It would take the interest on $2,000,000 to pay the expenses of their organization, and very few of them have anything like $2,000,000 wrapped up in their business; but, say they have. It would take practically the interest on $2,000,000 to pay the expenses of their organization before they would have any property whatever, and they must make, if they are going to make double the cost of operation, at least 10 per cent. on $2,000,000, and in building a property of this sort they would only be allowed 6 per cent. on the money, and they cannot afford to invest money at 6 per cent., so it would be worth a good deal for these people to have the property built and brought in completed, when they would add 10 per cent. for interest and 20 per cent. for getting around all these risks. You have the cost of organizing the company, the printing of your records, the engraving of stock, bonds and miscellaneous matter and working capital to provide, and I want to call attention to one point with respect to working capital which is often overlooked. Let us assume that the common day of reading the meters is the 24th of the month. Now, between the 24th and the 30th of the month, a certain amount of gas is passed through those meters, but that no longer is stock to you; it is an account receivable but not billed from the concern. While that gas may not have cost you its sale price, you are entitled to receive the full sale price. So the average gas company's books could legitimately show a charge against their consumers as a whole, representing the amount of gas which was sold between the date the meters were read and the end of the month, and that really represents working capital that you put into the business, and you often put it in unconsciously, yet that is a portion of your necessary working capital, and is represented, as far as valuation goes, as an asset which we have a perfect right to claim. After you have contributed your working capital, including that item of unbilled gas, then you have certain other necessary expenditures besides the expenditures for the physical property. For instance, you must have your operating organization on hand prior to the completion of your plant. Very frequently you will expect to complete your plant, say, the 1st of April, and instead of that you complete it on the 1st of the following December. You have made your contracts with your operating organization, and expect them to be on hand 60 or 90 days before the completion of the plant, ready to take hold and operate it. So you must make a certain allowance for that. You have then to start your plant, and for a long time you cannot even expect to earn operating expenses. Now, the failure to earn operating expenses is just as much of an investment to make that enterprise a success as any one of the things which preceded it. It is another contribution to the tangible property of that enterprise, and that is a legitimate charge against the value of that enterprise. After you have commenced to earn operating expenses you have to pass through a long period of time before you will earn any proper return on the money actually invested in that business, so you have as good a right to charge for interest, while the plant is being developed to the point where it will support itself and pay interest on the necessary amount of investment employed, as you have a right to charge interest on funds used to complete the plant. When you get to the sum of those things you will find they represent the minimum cash value of your enterprise. In comparing minimum cash value with the proper capitalization, an allowance must be made for brokerage, banking, etc., of not less than 8 per cent. In other words, if your enterprise, after you have finished and completed it, showed that it was worth $920,000, a capitalization of not less than $1,000,000 would be justified. I think there is more opportunity for a difference of opinion as to what constitutes value than as to what constitutes a proper rate of return; and I believe that this Association, if it did not do another thing, could very well afford to give this question of valuation and matters of that sort close attention, even though the many subjects usually touched upon at a convention should not be touched upon at all. Heretofore it did not make any difference to us what the value of our property was, we probably could not make it any more or less. Take a piece of real estate, for example. If I took hold of the Milwaukee Gas Light Company to-morrow as its Manager, and there was no State Commission, I probably would not waste a moment's time trying to find out what the value of the real estate of the Milwaukee Gas Light Company was. Why? Because, by determining the value of that real estate I could not increase or diminish the earning power of the property one iota; but when I finally get to the point where my earnings are going to be determined by the valuation of my property, then the question of valuation assumes great importance; and it is the one thing to which the gas men (or very few of them) of this country have ever paid any attention. If you can point to any man who is a court of last resort and authority on the subject of valuation, I will gladly sit at that man's feet for information and advice; but I do not feel that there is such a man, and I feel that it is up to all of us, and especially the men in this State, to determine this very important question of valuation of an enterprise. It is not the property alone that we want valued, we want it as an enterprise. I have allowed in my estimate, which I forgot to mention, the cost of developing business, and in the particular case that I talked about I claimed as a minimum not less than one-half the annual gross receipts. All of the estimates I made in that calculation were of minimum value, and the reason I said one-half was because I knew that that was modest, and as I am interested in other properties where they have not gotten as yet the proper development of the business, and would willingly pay a full year's gross receipts to someone who would come in and develop the business rapidly and properly for me, as I would willingly pay a full year's gross receipts to have it done, I thought 50 per cent. of 1 year's gross receipts was certainly none too much, and I am not sure but what I would pay a good deal more. I am not going to touch on the subject of depreciation—I do not want to so thoroughly incur your ill-will by the length of this address as not to be able to come back. This is also a subject where I find great opportunity for disagreement. I do want to say, however, that it is not to me the subject of great importance that it seems to be to many other people, and I am taking the position now that we are all going to disarm ourselves, that we are going to the State Commission and tell them exactly what we think. I was very much interested in the remarks of Prof. Meyer last night. They were fair, candid and showed a disposition to treat all sides justly, and the one thing that especially appealed to me was when he said "When you know a thing is 7.3, come in and say so, and not that it is somewhere between 1 and 50." I do not think there is going to be any disagreement on depreciation. Even if there is, the Commission must sooner or later give us a proper allowance for the maintenance of our properties. I do know that in some properties, if they would give us the proper allowance for earnings, depreciation and matters of that sort, it would dictate a price which would be too high to properly develop the business, and in many cases we have to subject ourselves to a return inadequate for the investment required, for the sake of some time in the future having a profitable enterprise. I just want to say that almost every enterprise in the State of Wisconsin has at some time gone through that period, and that point must be borne in mind by the State Commission when it places a valuation on our property. I also want to say that every one of these properties is built in a community before it was large enough to support the enterprise. If that community fails to grow the investment is a total loss, and every one of these enterprises in the State of Wisconsin has been built in the utmost of good faith, believing that they would be entitled to receive the profits the same as a man who bought real estate or bought any other form of property with which the public has not as yet concerned itself. I want to tell you one other thing, and this is digressing, perhaps, but when the municipal ownership fight was on in a certain city, a certain corporation man employed a number of earnest advocates of municipal ownership, and teaching them to go out and preach the gospel that not only the quasi-public corporations, but the drug stores and the saloons and everything else should be operated by the municipality. One of these men got very much interested in it, and thoroughly believed it; and it can be readily demonstrated that if the public are going to operate a municipal plant involving the same amount of

money that it would require to run a gas or electric light plant, or street railway, a great deal of money can be saved by investing it in something else; and if the public put their money into coal yards, drug stores or any one of the numerous enterprises which are supposed to be of a private character, a great deal more money can be saved to the public than by going into the gas or electric business. That is one of the unanswerable things about municipal ownership. It is one of those things that if the gas men and electric men of this country in the early days had given the attention and thought it deserved, and analyzed the problem, they could have reduced the period of municipal ownership worry to a much shorter period than they did. We had that before us as a nightmare for years and years. Now we are facing another and a different proposition, and I am wondering whether we will allow history to repeat itself, as in the municipal ownership agitation, or whether we will get together and find out what are the true facts; for if we had known the true facts about municipal ownership it would have been a short-lived affair. Certainly no one is going to invest in these quasi-public corporations unless he can make the same degree of profit which can be made in a private enterprise, and for that reason alone the public for their own good must make their terms sufficiently liberal in relation to the old properties to induce other people to take up new enterprises. In going over this matter I think it can be plainly shown that every $100,000 of investment in physical property means the necessary investment in some other way of at least $50,000 or $60,000; and I think it can be demonstrated to any court that the talk about the physical value of a property representing anything like the value of the enterprise is simply absurd. We certainly want to take these things up and consider them promptly and thoroughly, and to convince people that our position is reasonable and just, and I am satisfied that we can convince anybody and everybody that these properties have a value far beyond any physical value that the properties now represent. [Great applause.]

The Vice-President—Mr. Doherty has covered the ground so thoroughly that very little is left to be said; but if any of you feel that you would like to emphasize or criticize any of the points he has brought out, we would be glad to hear from you.

Motion was then made that a vote of thanks be extended to Mr. Doherty for his excellent address. [Seconded.]

Mr. Pratt—Before that motion is put I would like to express my personal appreciation of the very complete remarks that Mr. Doherty has made. He has touched upon a great many things that are of exceeding interest, not only to the companies represented here, but to individuals. I have had three or four experiences recently along the lines Mr. Doherty has suggested, and he has brought out many things that are of great value to me individually, and he has covered the subject so completely that it will be time well spent by members of this Association and of other Associations in reading and studying and digesting carefully the remarks that he has so well made before this Association, for I think it is as complete and thorough a diagnosis of the situation as I have had the good fortune of either listening to or reading.

[Motion carried unanimously, by rising vote.]

The Vice-President—I agree fully with all that Mr. Pratt has said in that line. I only wish that it was within my capacity to talk as easily as Mr. Doherty does, and I would say lots of nice things to him for the work he has done.

Mr. Doherty—I know it is a nice thing, and it is always appreciated by the recipient, to say any effort of this sort is acceptable. If, however, my work along this line is believed by the Association to have any particular value, I think I can arrange to redictate what has been said here, putting it in more concise shape, and also covering one or two points that I had to drop on account of the lateness of the hour. If there is any likelihood that the Association want to incorporate my remarks in its "Proceedings," I should like the privilege of revising them.

The Badge Matter.

The Vice-President—Mr. Doherty will be given an opportunity to revise his remarks. What is your pleasure about the badge question?

Mr. Pratt—While it was not my good fortune to hear Prof. Meyer last evening in his address at the dinner of this Association, I read what the papers said about it this morning, and have also talked with some of the members, and it seems to me that what was said by him was so eminently fair and straightforward that the following resolution would not be out of place at this time.

"*Resolved*, That this Association, express by a rising vote, its appreciation of the courtesy of the Hon. B. H. Meyer, Chairman of the Railway Commission, in attending and addressing our banquet last evening; and that the Secretary be directed to forward a copy of this resolution to Mr. Meyer."

[Motion seconded and unanimously carried by a rising vote.]

Mr. Doherty—Can it be referred to a committee?

The Vice-President—That would be the proper way to take care of it.

A motion was made that the question of the badge and design for same be referred to the incoming officers, with power to act. [Carried.]

The Vice-President—Mr. Brown is down for an address on valuation, but as the ground has been covered so fully by Mr. Doherty Mr. Brown prefers not to say anything further upon the subject. He had prepared no set paper, and expected to give you a few extemporaneous remarks, and as I said before, the ground has been so fully covered that I think he would prefer to have the matter dropped. I want to thank you for your attention and attendance and express my appreciation of the honor I have had in directing your meeting.

Complimenting the Officers.

Mr. Doherty—I want to compliment the officers of the Association on the successful meeting that has been held here at this time as well as at other times. The standing of the Wisconsin Association is excellent all over the country, and I want to suggest that the members of the Wisconsin Association owe a greater vote of thanks to their officers than almost any other Association I know of. As they cannot put the motion themselves, I move that a standing vote of thanks be offered to the officers for their work, and the efficiency with which they have not only provided for this meeting, but conducted it. [Seconded and unanimously carried by rising vote.]

The Vice-President—I thank you, gentlemen, for your vote, and wish to say that the credit is mainly if not all due to your Secretary. There being no further business to come before us, the meeting is now declared adjourned *sine die*.

FOURTH ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

Held at Omaha, Neb., June 17, 18 and 19, 1908.

First Day—Morning Session.

The convention was called to order, at 10:15 A.M., by the President, Mr. Jansen Haines.

ROLL CALL.

The following members were in attendance:

Averill, A. T.	Grey, J. C.	Martin, E. H.
Averill, G.	Green, G. A.	Mead, J. J.
Asendorf, C.	Gates, T. J.	Mueller, F. B.
Alcock, H. H.	Gamble, C. B.	Maynard, H. B.
Bebb, J. F.	Hohn, O.	Olds, H. L.
Borden, A. W.	Haines, J.	Potter, H. W.
Bertke, W.	Honeywell, H.	Parker, J. F.
Battin, I.	Houck, O.	Polk, R. W.
Bradford, W.	Hensinger, C. R.	Patterson, C. F.
Burgess, W. L.	Hutchinson, W. P.	Roper, G.
Clary, E. D.	Haskell, W. W.	Ritchie, R. J.
Chubb, C. N.	Heaton, P. S.	Redman, R. S.
Clabaugh, G. W.	Haas, P. J.	Schall, H. D.
Carson, G. S.	Hovey, S. B.	Stewart, J. K.
Crawford, T.	Jamison, R. S.	Smyley, W.
Crain, C. E.	Kellogg, L. L.	Tenney, C. I.
Clabaugh, A.	Kidder, F. A.	Taylor, W. H.
Colquhoun, E. M.	Leaky, N. Y.	Tarr, J. C.
Crady, E.	Lawlor, R. H.	Vincent, G. I.
Forest, G. S.	Lea, H. I.	Waring, G. H.
Fair, C. W.	McLean, G.	Wickham, L.
Fritsch, C. H.	Mettler, L. B.	Zimman, I. B.

Welcomed to the City.

The President—Gentlemen, I have pleasure in introducing to you Mr. Euclid Martin, of the Omaha Commercial Club, who has kindly consented to welcome you to Omaha.

Mr. Martin—Mr. Chairman and Gentlemen of the Iowa District Gas Association: In behalf of the commercial interests of this city, as representative of its Commercial Club, I take pleasure in extending to you a cordial welcome to our city. I am not very familiar with the purposes of your organization, but I take it for granted that you form simply a part of the onward march of the commercial world. As I came from my office a little while ago, my mind went back to my first visit to this city, which was in 1868. I came through the State of Iowa, and remember very distinctly how (I think about Logan, on the Northwestern Road) on either side of the railroad was encamped quite a large tribe of Indians. When I landed in Omaha,

one of the most common sights was Indian bucks, squaws and boys shooting at pennies. Immediately north of what is now the business center of this city, and what is one of the best residence districts, was encamped a large body of Indians, known, I believe, as the Omahas. I think of this compared with the situation to-day. My next visit to Omaha was in what was known as the "grasshopper" year. If there are some of you gentlemen, members of the Association, from Nebraska, you will doubtless recollect in that year there was great talk that the grasshoppers had eaten everything up. I went west from Omaha as far as Adams and Thayer counties. It was in the month of July or August, and I was impressed then, as I have been since, that there wasn't very much for the grasshopper to eat. He did eat, I think all that was green here. I stayed all night at the little town of Hastings, then possibly holding some 300 or 400 inhabitants; and if there is a gentleman here from Hastings he will probably recall that the principal industry was saloon keeping, and that the best hotel in the city was the Ogden House. From there I passed down to Thayer county, going through the western part of the "Great American Desert," so-called on the maps for many years. The country on either side of the railroad at that time was covered with grass about 2 inches high, as dry and parched as it would have been had it been in the oven for 24 hours; and I do not exaggerate when I say I would not have given then $1,000 for all of the country from Hastings to Hebron, a distance of some 70 or 80 miles. To-day that country is covered by farms valued all the way from $50 to $100 per acre, representing perhaps as great an agricultural district as there is in the world. I mention this simply because it seems to me we are progressing about alike. About that time we were progressing from the tallow dip to the ordinary gas, and there has perhaps been as much advancement since that in the matter of securing the best results from gas as there was from the tallow dip to the common light. You have no doubt gentlemen here who will discuss these subjects much better than I can. I only speak of it as being a part of the progress of the world, as it looks to me. I came to Omaha again in 1882 and commenced business, and soon after that some enterprising gentlemen commenced saying that they saw no reason why Omaha should not be a stock market, or why we should ship our stock from Omaha and the surrounding country to Chicago, have it killed and shipped back again. I read in the *Omaha Bee* a few days ago some facts with relation to this matter that I think are worthy of some attention. I learn that they claim Omaha is to-day the largest butter market anywhere. (Of course the butter market naturally springs from the crops.) Omaha's packing output in 1906 was valued at $120,000,000, and the manufactured product at $230,000,000. I called upon the Secretary of the Commercial Club for some information with reference to the stock receipts—I mention this because I consider you gentlemen a part of this progress. That Omaha has progressed, anyone at all familiar with the situation understands; but it could not have been except for the goodwill and friendship of the surrounding country, which you gentlemen represent. The receipts of cattle, in Omaha in 1884, were 88,000, and the shipments 83,000, showing that, of all the cattle received, but 3,000 or 4,000 went east. In 1907 Omaha received 1,158,710 head of cattle and shipped out 361,000; showing that we butchered in this city about three-fourths of all the cattle received. The same holds true of other stock—hogs and sheep. A few years ago some of the more progressive citizens of Omaha thought there was no reason why we could not have a grain market here, just as well as to ship our grain to Chicago and New Orleans, Milwaukee, Minneapolis and other points, so we started a grain exchange. The total amount of grain shipped during 1907 was 8,507,500 bushels, and this has created the third market for corn in the world. Very recently it developed there were passing annually through our city, through the State of Iowa, over the great trans-continental lines, something like 3,000 or 4,000 carloads of wool, and we decided that Omaha might as well be a wool market as to have our wool go to Boston and other points. We felt we had contributed to the extreme east long enough. So we started to create here a wool market, and I have no doubt you will be surprised, as I have been, to realize that the value of the wool produced in the few States tributary to this market—the wool that must go through here, whether it stops or not—in value amounts to $24,500,833. So, while we have no mountain scenery to show you, we can show you, we believe, a progressive city. We can show you a line of buildings commercially equal to those of any other city of its size in the world. I feel that you are in good hands so far as your care here is concerned. I can only, as I do, on behalf of the citizens, again express to you our pleasure at meeting you. We hope you will come again. I believe that the next time you come, or at least some time in the future, it will perhaps be in another form. You will likely come by means of some aerial passage, by which you will pass through the air instead of along railway tracks. This is one of the things looked for and one of the evidences of progress that I believe you can see in store. And I have no doubt when you come that way, some enterprising gentleman in your business will see to it that these instruments of passage are lit up with gas, that you will have something equal to or a great deal better than the Welsbach, so that as you fly through the air you can go as well at night as at daytime. In any event, gentlemen, we are glad you are with us to-day. We hope that you will like us so well that you will come again; and in closing I express the hope that your business with us will be pleasant and profitable to you all.

Reply of Mr. McLean.

The President—I will ask Mr. George McLean, of Dubuque, to respond.

Mr. McLean—Mr. Martin, on behalf of the officers and members of this Association it gives me pleasure to thank you for the cordial welcome you have given us to Omaha. I personally have been much interested, and I think the members have, in the little sketch you have given of the history of this now important city. Many of us are native Westerners. I am myself a native of the soil and to the manner born, and it is still within my recollection when Omaha was regarded as a frontier town. We now know it as the metropolis of a great trans-Mississippi empire. We know its reputation for hospitality and we are glad to have that confirmed by the generous reception you have given us to-day. This Association represents three States, Iowa, Nebraska and South Dakota, all situated in the agricultural region that you have described, and whose products largely pass through the Omaha portal. We represent States that have large agricultural resources and are situated in the heart of the most prosperous region of the most prosperous country on earth. We know that Omaha is the gateway to giant commerce in this region. We know something of its history; we know something of the progress it has made. Your presence here and the welcome you have extended us I think imply recognition on your part and on the part of those you represent, of the nature of the industry which the gentlemen here assembled are undertaking to further, and of its importance to all cities and its general usefulness in promoting the welfare and happiness of the community served. I think it also implies that there is a mutuality of interest between these communities and the companies that are supplying the service. That indeed is a fact, and one that is nowhere more keenly appreciated than by the very men in charge of these utilities; and I believe it is a fact that the sooner all classes of persons in every walk of life, and the authorities in every city, recognize that that service which is best for the community is best for the company providing the service, as the managers of those companies now recognize, the better it will be for all concerned. I feel that, as respects the tonnage of Omaha, some of the figures are so large that we can't entirely comprehend them and certainly digest them. You have also referred to the products of this city. I believe that you have already proposed a Corn Exposition. I don't know what will be done with rye, but the gentlemen who are here assembled will no doubt have some use for products of that character, and I hope that after we are gone no mention of the tonnage of that character will appear in your statistics. As regards aerial navigation, it is possible that you may find some of them already in the air before they get away from Omaha, and the most we ask of you on that occasion is that you will kindly ask the authorities to look the other way. I think it would be a pleasure to all to come to Omaha, and we will be pleased to come here again, I am sure. We expect to have here a profitable session, and no doubt we will be much interested in taking a view of some of these splendid institutions of Omaha. We recognize something about the grandeur of this city at present and about the good citizens you have here. We know that, notwithstanding these resources, the greatness of Omaha is, after all, founded and depends upon that excellent citizenship which Omaha has and which the region surrounding Omaha has. We used to think in Iowa that we were in the very forefront. We were proud because statistics in matters of education showed the sacrifices the people of our State had made for education. We now find that there is just one State in the Union that excels it, and that State is Nebraska. We will have to admit that by Nebraska we have been surpassed, and we hope rivalries of that kind will continue, as they must be for the benefit of all. I again wish to thank you, and extend through you our thanks to the commercial body you represent, and to the citizens of Omaha for the generous reception you have given us.

The President announced the next order of business to be the reading of the minutes of the last meeting. Upon motion of Mr. Waring, the reading of the minutes was dispensed with. The

REPORT OF THE COUNCIL

was read by the Secretary as follows:

The Council of the Iowa District Gas Associations met at the Hotel Rome, Omaha, Neb., June 16th, 1908. Present, Messrs. Haines, Waring, Fair, Chubb, Honeywell, Averill and Vincent. The following Committee on Nominations was appointed as follows: A. T. Averill, G. W. Waring and C. W. Fair, Chairman.

Applications for membership were approved as follows:

Active Membership.

B. C. Adams, Gen'l. Supt., Lincoln (Neb.) Gas and Electric Company.
Wm. J. Bertke, Engineer, Sioux City (Ia.) Gas and Electric Company.
W. E. Brice, President, Peoples Gas and Electric Company, Mason City, Ia.
Wm. Bradford, Supt. of Mfg., Lincoln (Neb.) Gas and Electric Company.
S. W. Cheney, Supt. of Dist., Lincoln (Neb.) Gas and Electric Company.
Wm. E. Davis, Manager, Omaha (Neb.) Gas Company, South Omaha.
Wilbur B. Foshay, Gen. Mgr., Ft. Dodge (Ia.) Light and Power Company.
C. J. Garlow, Columbus (Neb.) Gas Company.
G. A. Green, Manager, Cherokee (Ia.) Gas Company.
F. J. Gates, Manager, Oelwein (Ia.) Gas and Power Co.
P. S. Heaton, Manager, McCook (Neb.) Gas Company.
W. W. Haskell, Owner, Ord (Neb.) Light and Fuel Company.
J. H. Jamison, Vice-President, Osceola (Ia.) Light, Heat and Power Company.
F. A. Kidder, Superintendent, Red Oak (Ia.) Gas Light Company.
H. B. Maynard, Secretary, Citizens Gas and Electric Company, Waterloo, Ia.
W. H. Taylor, Jr., Asst. Supt., Omaha (Neb.) Gas Company.
E. M. Walker, Gen. Mgr., Citizens Railway and Light Company, Muscatine, Ia.

Junior Membership.

H. H. Alcock, Manager, Monarch Acetylene Company, Omaha, Neb.
Wilbur L. Burgess, Treasurer, Burgess-Granden Company, Omaha, Neb.
C. E. Crain, Sales Mgr., Ruud Mfg. Company, 1332 Main street, Kansas City, Mo.
Albert Clabaugh, Comm'l Agt., Nebraska Lighting Company, Plattsmouth, Neb.
E. M. Colquhoun, New Business Dept., U. G. I. Company, Philadelphia, Pa.
Elmer Crady, New Business Mgr., Sioux City Gas and Electric Company, Sioux City, Ia.
C. H. Fritsch, Salesman, Parker-Russell Mfg. Company, Liggitt Building, St. Louis, Mo.
P. J. Haas, Salesman, American Construction Company, York, Neb.
Fred. B. Mueller, Asst. Secy., H. Mueller Mfg. Company, Decatur, Ills.
C. F. Patterson, Dist. Clerk, Omaha (Neb.) Gas Company.
R. S. Redman, Secy. and Mgr., American Construction Company, Newton, Ia.
Worthing Smyley, Mgr., Connelly Iron Sponge and Gov. Company, Chicago, Ills.
J. C. Tarr, Cadet Engr., Omaha (Neb.) Gas Company.
I. B. Zimman, Contract Agent, Citizens Gas and Electric Company, Council Bluffs, Neb.

Recommendation to amend the Constitution by substituting the word "Associate" for the word "Junior" in Secs. 5 and 7 of the Constitution, and in such other sections as it may appear.

Report of Committee on Papers received and approved.

Proposed affiliation with the American Gas Institute approved and recommended.

Recommendation of a donation of $25 to the Trustees of the Educational Fund of the American Gas Institute.

G. I. VINCENT, Secretary and Treasurer.

COUNCIL MEETING IOWA DISTRICT GAS ASSOCIATION.

The Council of the Iowa District Gas Association met at Des Moines, February 3d, 1908. Present, Messrs. Waring, Fair, Haines and Vincent. The following Committees were appointed:

Arrangements.—Edmund H. Martin, G. W. Clabaugh, Geo. Roper, Geo. H. Waring, Chairman.

Finance.—C. N. Chubb, E. D. Clary, Campbell W. Fair, Chairman.

Decided on next meeting place at Omaha, Neb., June 17, 18 and 19.

Resignations of the following were received and accepted: J. D. Adee, C. H. Brown, B. Brady, O. D. Miller, L. H. Reuping, Frank Stewart.

The Secretary was instructed to confer with Secretary of Institute in reference to affiliation. The papers were assigned and discussion topics selected as per the announcement attached hereto.

Committee on papers was appointed as follows: G. W. Clabaugh, Chairman; G. H. Waring, C. W. Fair, G. I. Vincent.

Committee on printing was instructed to proceed with work.

Council adjourned to meet at the Hotel Rome, Omaha, June 16th, at 8 P.M.

ELECTION OF NEW MEMBERS.

Upon motion of Mr. Clabaugh, seconded by Mr. Waring, the Secretary was instructed to cast the ballot of the Association for the election of the applicants for membership named in the report of the Council. The Secretary announced the ballot so cast, and the President declared said persons duly elected to membership in the Association.

Vice-President Averill assumed the Chair.

ELECTED TO HONORARY MEMBERSHIP.

Mr. Haines—Gentlemen, I have a motion to present, which has received the unanimous approval of the Council, which I offer the Chair. We have with us to-day a man who has given a long and useful life of 56 years to the development of the gas business; one who has ever been at the post of duty, and who by his integrity and steadfastness has won the hearts of his associates as the Nestor of our fraternity. I therefore move that Mr. Isaac Battin, Treasurer and Engineer of the Omaha Gas Company, be made an honorary life member of this Association.

Mr. Clabaugh—Mr. Chairman, one of the greatest pleasures in my life, having been associated with Mr. Battin for more than 18 years, is to second this motion and to ask that it be given a rising vote, for I believe and know that it will be unanimous.

The Chair—Gentlemen, those in favor of the motion will please rise. It is carried unanimously.

Mr. Battin—Mr. President, you have almost overwhelmed we with this mark of your appreciation and regard, and I have no words to say anything more than the cordial thanks I give you all. Not from any personal merit of my own, I drifted into the work, as all young men do into something that opens the way for them; and I have simply endeavored to do as well as I could in the long life which has been given me to do. I consider that you, gentlemen, are in one of the most useful and honorable occupations that fall to the lot of man. There are so few of the utilities that serve the public that are more useful and more convenient and tend more to physical and intellectual progress. The light you furnish enables us to almost double our time of usefulness and activity, and the incidental effects of your product are such as to lighten the labor of the housewife. It extends to the household of the man who works daily for his bread and makes him a better home, lightens the labor of his wife, brings cheerfulness and comfort. Especially in the variations of our climate, when the ordinary fire of our forefathers is uncomfortable, it has every advantage. I am glad to look on your faces, gentlemen. You young men are coming up to relieve us as we are passing along, and you appear as if you were fully competent. This bringing ourselves together is a good thing, and as you meet from year to year you will find that it is profitable to you and that you go home prepared to resume your duties more intelligently and efficiently.

The President—In the report of the Council the recommendation is

made that the word "Junior" member be changed to "Associate" member. In considering the matter in the Council meeting we felt that the word "Associate" was rather more appropriate. We only have three classes of members—Active, Junior and Honorary—and we considered the word "Associate" more desirable than "Junior." The Chair will entertain a motion for that change, and you will be asked to vote on this change in the Constitution, which requires a two-thirds vote of the members present.

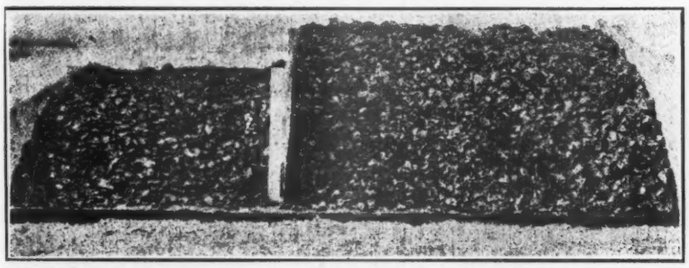
Mr. Clabaugh—I move that the Constitution of the Iowa District Gas Association be amended by changing the word "Junior" to the word "Associate" in Secs. 5 and 7, and in such other sections as it may appear. [Seconded by Mr. Waring.]

Mr. Kellogg - I move that the Secretary be instructed to cast the ballot of the entire membership for this amendment to the Constitution. [Seconded and carried.] The Secretary cast the vote as instructed, and the President announced the amendment carried by unanimous vote of the Association.

(To be Continued.)

Self-Explanatory Diagrams.

The accompanying diagrams require no explanation. Those who care to go further respecting them may write to Engineer Yorke, at Portland, Me. He is the one who is responsible for the showing.

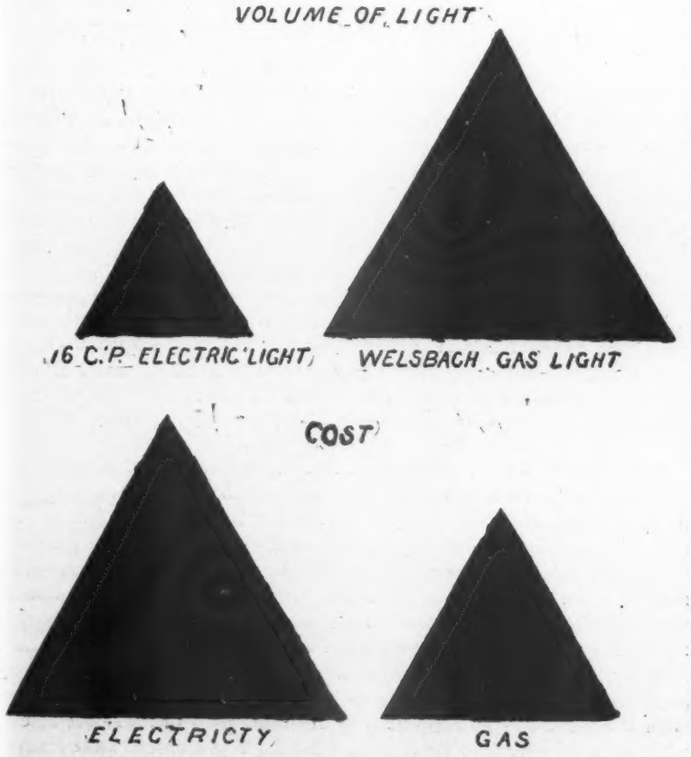


ONE TON STOVE COAL, $7.00 ONE TON GENUINE GAS COKE, $5.00

Orders for Portland Gas Light Company's Genuine Gas Coke

May be Left at 9 Temple Street, or at the Works, 40 West Commercial Street.

DIAGRAM
SHOWING RELATIVE VOLUME OF LIGHT AND COST OF GAS AND ELECTRICTY.



THE GAS APPLIANCE STORE, 11 Temple Street.

The Marine Gas Engine.[1]

Since the paper enforcing the potentialities for success possessed by the marine gas engine was communicated to the Institution of Naval Architects about a year ago by Mr. James McKechnie, of the Vickers Company, interest in the subject has increased. Progress towards the solution of the problems has been made principally in details. But we are yet some way short of the bold step attributed by some of the daily papers to the Admiralty of contemplating the adoption of gas engines in the battleship to be laid down at Portsmouth under this year's naval programme. The engineering authorities at the Admiralty prefer—and very properly so—to proceed upon sure basis, and the adoption of a gas engine propelling installation will not be undertaken until exhaustive trials have been made, ashore and afloat, with the two small gas engine sets still under construction. These two engines, with their producers, have been under order for a long period, a fact suggestive of the difficulties connected with the application of the system for marine purpose. For land stations, principally for the driving of electric generators, engines having cylinders developing 1,000 and even 1,500 brake horse power are working satisfactorily; but there are relatively very few gas engines driving ships, and the largest of these is of almost insignificant power. In this country, Mr. William Beardmore, of Glasgow, has done much towards practical tests on board ship. The promise of success is now greater than in the earlier stages, because the great advantages of the system are now realized and the exact nature of the difficulties to be overcome is recognized. Once a diagnosis is correctly established, the cure is rendered more easy.

The advantages to be obtained from an installation of large size for marine propulsion are a saving of one-third of the space occupied by machinery, and a reduction of the total weight of machinery of possibly one-fourth. While the engine itself would have to be much heavier than a steam engine of the same power, the necessary gas producers would be much lighter than the steam boilers. As the gas engine and producer have a thermal efficiency about double that of the combined thermal efficiency of the steam engine and boiler, it should be possible to get a horse power at the propeller for 1 pound of coal per hour, and also to obtain it from a cheaper grade of coal than can be used to advantage in a boiler. The last named advantage will appeal strongly to owners in the mercantile marine, as it will enable the fuel cost of transport per ton-mile to be considerably reduced. Gas producers, when once charged, will go on making gas for several hours without further attention. In Beardmore's tests on board ship the producer, once charged, runs for 10 hours without attention. The same large force of stokers needed for a steam installation of any size will not therefore be required. Where there are many producers they would be charged in succession, and not more than two or three in any one watch. There would be considerably less than one-quarter the amount of ashes to handle in a given time, and there should be no clinker at all. There would be no smoke, and, therefore, the large funnels, with their wind resistance, would not be present. The space usually occupied by uptakes would also be saved. This advantage would be of considerable value to naval vessels by enabling them to almost get into range before their presence could be detected. It must be remembered that each and every cylinder in a gas engine is a complete engine in itself, and should one or more breakdown, the disabled cylinder could be put out of operation, and the propeller turned as long as there was a single cylinder left in working order. It is only necessary to remove the connecting rod, and the rollers that are operated on by the cams, in order to disconnect a cylinder—a much lighter job than would be required in the case of a steam engine, though the weight to be handled might be greater.

The disadvantages of gas propulsion for marine use, though many in number, are not by any means insurmountable. The chief objection seems to be the very high temperature that obtains in the cylinders when they are of large size, and the consequent liability of the valves to score and give trouble, finally resulting in a complete temporary stoppage, which would be exceedingly inconvenient, if not dangerous, at sea. There are several methods of reducing this excessive temperature, such as making the engine of relatively long stroke, diluting the charge with a surplus of air or some of the exhaust gases, increasing the volume of water circulating in the jackets and pistons, or injecting water into the cylinder during combustion. Valves, if of large size, can readily be water jacketed. They can also be double seated, and thus cause the speed of the hot gas through

1. *Engineering*, London, England.

them to be reduced, and the work required to lift them to be lessened. Another objection has been the great size and weight of the crank shafts and connecting rods, framing, etc., in order to withstand the heavy and violent shocks incidental to all gas engines. Here again the relatively long stroke engine will score, and by adopting a cycle of operations in which heat is added at constant pressure rather than at constant volume, the violence of the shocks can be reduced, and a lower temperature of combustion obtained at the same time. It has been considered a disadvantage that most gas engines are fitted with trunk pistons, and that therefore the connecting rod pin is inaccessible, and the piston, when worn, has to be entirely renewed. But when gas engines are built specially for marine use, they will be of such a size that they will have thin water cooled pistons, be double acting, and be fitted with the ordinary crossheads and slides used upon steam engines; or if trunk pistons are used, they will be fitted with adjustable shoes to take the wear in the wake of the connecting rod pin.

It is generally considered to be a difficult matter to make a gas engine reversible, but this is only because it has generally been attempted with the usual revolving cam gear, and on engines of comparatively small size. On large engines, oscillating instead of revolving cams can be used with advantage, and these can be operated by the well known Stevenson link motion or by the Joy, Marshall, or other radial reversing valve motion, worked by compressed air when the engines are very large.

A special compressor, driven by an independent gas engine, will always form part of a marine gas engine installation, because compressed air will be required for starting the main propelling engines, blowing the whistle and siren, working the reversing engine, circulating and other pumps, steering engine, capstan, deck winches, ash hoists, etc., which are now part of the recognized outfit of the modern steamship. Under certain circumstances, all this work might be done by electricity, in which case a separately driven electrical generator would take the place of the air compressor. A disadvantage of the gas engine for marine propulsion is its want of flexibility in the rate of revolution at which it can be driven, but there are several ways in which this can be met, such as cutting off the gas supply to one or more cylinders, building the engine in two or more distinct units, which can be readily connected up or disconnected, applying the total power on three or more shafts, so that one may run ahead and two astern, or *vice versa*, so that a ship of large total power may be run at very slow speed when necessary.

A mechanical disadvantage of the gas engine, when used for marine propulsion, is the uneven turning moment, especially when run on the 4-stroke cycle. It is, of course, much better on the 2 stroke cycle, but as in the latter case twice the amount of hot gas has to pass through the exhaust valve in a given time, special provision has to be made to meet and overcome this difficulty. Three double acting cylinders, acting on cranks at 120° apart, is probably the smallest unit that can be relied upon to work satisfactorily, and even then it would be necessary to employ a flywheel. Another mechanical difficulty is in so regulating the power that it shall follow the sudden variation in the resistance, due to the propeller being partially lifted out of the water when the vessel pitches; but some form of high speed centrifugal governor arranged to cut out or throttle the gas supply, relieve the pressure in the cylinders, cut out the ignition, or a combination of two or more of these methods, should be able to meet the difficulty.

What to do with the exhaust from the marine gas engine is also quite a difficult problem to settle, but as the object sought to be attained is both to cool and reduce the volume of the exhaust gases as rapidly as possible, some form of surface condenser, in combination with an injection of part of the cooling water into the exhaust pipe, ought to meet the case. The cooled gases could also be afterwards discharged overboard below the surface, and thus secure perfect silence. Objection has been made to the gas producer on board ship that poisonous gases are liable to leak out and either kill the crew or cause disastrous explosions, but if operated under the suction system this does not hold, since any leak would be into, and not out of, the producer. If the producers are operated on the pressure system, it is only necessary to surround the producers and all the gas pipes with an outer airtight shell, and force the supply of air through the intervening space on its way to the producers. In this way any leak that could occur would be pure air, either into the ship or into the producers or gas pipes. If more than one producer were in use, it would be the duty of the attendants to regulate the amount of gas furnished by each, in accordance with the reading of a pyrometer fitted to each one so that the temperature of combustion in each was the same. This would not be any more difficult than the work of regulating the feed water to a battery of steam boilers.

Items of Interest
FROM VARIOUS LOCALITIES.

On the 9th inst., the annual meeting of the Bridgeton (N. J.) Gas Light Company was held, according to announcement. The retiring Directors were re-elected, and these subsequently perfected the following organization: President, Daniel Bacon; Secretary and Auditor, Wm. C. Mulford; Treasurer and Superintendent, B. F. Harding. The noteworthy thing in the proceedings, outside of the excellent returns for the year, as shown by the annual reports, was that Mr. Harding was elected for the 36th consecutive year.

"Big," genial, whole-souled "Joe" Acker informs us that the business formerly conducted by him, will hereafter be continued under the firm name of Joseph B. Acker & Co., with headquarters in 24 to 26 Pearl street, New York. Mr. Acker is certainly one of the best known constructors of benchwork wherever gas is manufactured. Mr. C. C. Weber, formerly Treasurer of Adam Weber Sons, is interested with Mr. Acker.

Mr. James Ferrier, President and Manager of the Rome (Ga.) Municipal Gas Company, writing to us under date of the 12th inst., says: "I observe that Mr. J. C. Grey in his paper (see Journal, *ante*, p. 9) refers to Dr. Richardson's experiments. Mr. Grey draws an erroneous inference from these experiments, and as I noticed that Mr. Brearley, of England, fell into the same error, I think it advisable to point it out. It will be found, on consulting the original report of Dr. Richardson's experiments, that he purified the atmosphere from both CO_2 *and organic matter*. His conclusions were, not that the animal died from poisoning by organic matter, but that oxygen purified by ordinary chemical methods was not fit for respiration, but that it must be re-vitalized by some natural process not yet fully understood. Of course, this does not weaken, indeed it rather strengthens Mr. Grey's main contention; namely, that if a room is not provided with the means of carrying off vitiated air, the matter of lighting it matters little, as far as hygiene is concerned. This is a fact, however, that the medical profession seems very unwilling to accept.

At the annual meeting of the Hadley (Mass.) Gas Company, the officers elected were: President, Edward West; Treasurer and Secretary, Dr. Frank Smith; Auditor, Frank Goodman.

The report of Mr. Snow, General Manager of the Holyoke (Mass.) municipal gas and electric lighting plants, for last June, as compared with the returns for the corresponding twelvemonth in 1907, shows a large gain in both divisions for the former period. The gas increase amounted to 19.20 per cent.; the electric increase amounted to 8.10 per cent.

The Consolidated Gas, Electric Light and Power Company, of Baltimore, Md., has, through its commercial division, been doing some advertising recently in the daily newspapers of that city, respecting the values and economy of the use of gas in the home—from cellar to garret. Whoever it is that is compiling the matter is doing it wisely and well. We are indebted to Mr. Charles M. Cohn, the Company's clever Secretary, for 7 of the latest series of ads. published; and we repeat, they were prepared wisely and well.

The Olympia (Wash.) Gas and Power Company has just issued a new rate schedule, from which it is learned that the discounts on quantities consumed per month range from 10 to 25 per cent. The 10 per cent. applies to a monthly minimum use of 2,000 cubic feet; the maximum to a use per month in excess of 10,000 cubic feet.

A correspondent in Houghton, Mich., forwards the following under date of the 9th inst: "The joint Councils of Laurium and Red Jacket, Mich., met in session the evening of the 7th inst., and one result of their deliberations was to amend the franchise of the Calumet Gas Company to the end that it was thus permitted to increase its selling rate in accordance with the following: The gross rate is to stand at $1.40 per 1,000, prompt payment (within 10 days) to entitle the user to a rebate of 15 cents, thus establishing a net rate of $1.25. It is further provided that when the Company is in a position to pay an 8 per cent. dividend on its shares for a twelvemonth, together with the necessary funds placed to the taking up of its funded debt, with suitable provision for sinking fund for replacement and renewal accounts, that a further revision of the selling rate shall be made.

"DEAR JOURNAL: What do you think of this? The City Council of Joplin, Mo., while in stated session some evenings ago, passed a measure, the meat of which is this. The Joplin Gas Company may, after a certain date, assess and collect a penalty of 10 cents per 1,000 cubic feet on each gas account remaining unpaid after the 10th day of presentation of the bill for each such account. But, behold! The Company may collect but may not retain the penalty, which is to be turned over to the City Treasurer, he to disburse the same on any charitable account that may be named by the Council. How's that? —H. V. R."

AT the annual meeting of the shareholders of the Burlington (Vt.) Gas and Light Company the Directors elected were: M. W. Stroud, S. P. Curtis, F. E. Burgess, F. H. Parker and W. P. Murphy.

AT the joint session of the General Council, held the evening of the 9th inst., Messrs. John Marshall, Joseph Scheffler, I. W. Bernstein and Henry Phillips were elected to represent the city in the Directorate of the Louisville Gas Company. The first three are new men to the position.

SOME days ago the Floral Park Light and Power Company, of the town of Hempstead, L. I., applied to the Public Service Commission for permission to sell its franchises and plants to the Nassau Light and Power Company, for $8,000 cash. In the argument before the Commission the main plea was that the proposed purchaser could conduct the business with greater economy and with better results to the customers than if both kept up a separate existence. The Companies are suppliers of electric currents. Can it be that Brother McDonald's Nassau and Suffolk Lighting Company is making it warm for the Hempstead electricians, especially in respect of street lighting, through his pertinacious pushing of Welsbach lamps on that account? Meanwhile his "best man," the urbane, logical Mr. S. K. Campbell, is casting many and prolonged glances in the direction of Mineola.

A FEATURE of the fourth-of-July celebration in Sacramento, Cal., was an open air concert arranged for the evening of that day by the Sacramento Electric, Gas and Railway Company, in Recreation Park. In fact the affair was such a pronounced success that the Company has arranged to give a series of concerts in the Park during July and August.

THE Brooklyn Union (N. Y.) Gas Company has applied to the Public Service Commission for permission to issue $2,000,000 stock to take up a like sum in par of convertible debentures issued quite some time ago.

THIS reached us from Peoria, Ills., under date of the 13th inst.: "A chap named Brockway, a resident of this city, recently purchased a gas stove on the installment plan from the Peoria Gas and Electric Company. All went well until a dispute arose over the settlement of a gas account, which Brockway refused to pay. The Company shut off his gas and demanded the stove ($4 thereon was unpaid), but Brockway would not give it up. The Company swore out a warrant and Brockway then made good. The proceeding was in the nature of a test case.—L. W."

"J. S. T.," writing from Cincinnati under date of the 13th inst., said: "Articles incorporating the Columbus (Ind.) Gas Company, which concern succeeds the Columbus Gas Light and Coke Company, were filed last Friday. The capital stock of the Company is fixed at $200,000, and the life of the corporation is placed at 50 years. The Directors elected are: Messrs. C. M. Keller, D. A. Barnes, B. O. Tippy, J. W. Thompson and W. E. Moss. I'm sorry to add that Mr. Keller retires from the active management of the Company; but there's some compensation in the knowledge that he retains his financial interest. The Company owes much, very much, to his efforts."

THE Bristol Company, of Waterbury, Conn., has recently issued a new catalogue descriptive of its staggered, steel point, belt lacing. From the catalogue we learn that these lacings are manufactured in 10 different sizes and of different lengths, suitable for every width and thickness of belting, from the lightest to the heaviest conveyor belts. Write to the Bristol folks for a copy of the catalogue.

THE Gas Workers' Union, of San Francisco, Cal., at its annual meeting elected the following officers: President, J. J. Breslin; Vice-President, Daniel Cameron; Recording Secretary, A. F. Coleman; Financial Secretary, Philip Knell: Treasurer, P. V. Kerns; Business Agent, G. W. Bell.

THE authorities of San Francisco, Cal., have under consideration the making of an ordinance declaring it a misdemeanor to have possession of machines, etc., designed to mis-register gas or electric current meter readings. One clause of the measure undertakes to define a rule of evidence by stating that the fact of benefitting by a meter tampering shall be considered *prima facie* evidence against a defendant.

THE Mayor of Hudson, N. Y.—by-the-way, his honor's name is Henry Hudson – has lodged a complaint with the Public Service Commission that, because of the excessive rates charged for gas by the Albany and Hudson Railway Company (for lighting, $1.75; for fuel, $1.50), the Company is earning from 18 to 25 per cent. on "a fair and just valuation" of its property. He begs the Commission to issue an order making a sensible reduction in the charges. This would be important, if it were not ridiculous. To our knowledge the gas supply of Hudson was carried on for many years at a positive loss to those who controlled the gas works.

ACCORDING to the figures submitted the operations of the Denver (Col.) Gas and Electric Company, for the twelvemonth ended May 31st (at that date the Company's fiscal year terminates), the gross earnings amounted to $2,049,430, an increase of $231,725 over the previous year. The sum available for division amongst the shareholders was $462,000, an increase over the previous year's amount in the sum of $135,110.

THE Suburban Gas Company, of Chester, Pa., has inaugurated what Advertising Manager Horace Beeson has denominated a "Jingle Contest." Prizes to the number of 14 will be awarded to those who compile the best rhymes, 4 to 12 lines in length, setting forth the varied uses to which gas may be put. The conditions permit anyone living along the lines of the Company to compete, and any number of jingles may be submitted by one person, but only one prize will be awarded to any one contestant. The judges are S. W. MacDowell, City Editor of the "Chester Times," and Mr. Beeson, and the wining jingles, together with the names of the jingleists, will be published when the awards are made. The prizes are: 1. Acorn gas range; 2. Lion water heater: 3. Handsome residence lamp; 4. Inverted Welsbach lamp; next 10. Credit for $1 on any purchase from the Gas Company. "Fred." Shelton is barred from the competition; but Mr. D. J. Collins may take a try in it.

MR. MAYNARD H. SPEAR, General Manager of the New York and Queens Gas Company, of Flushing, Long Island, recently appeared before Judge Fitch in the Flushing Police Court, to press a charge of petit larceny against two employees (one a negro) in the persons of Sylvester Thompson and Edward Watson. For some weeks money had been missing from the boxes of prepayment meters, and the police were notified. It did not take the latter long to detect the parties mentioned, rawhanded on the job. When arraigned, both pleaded guilty and they were held for Special Sessions. There should be plenty of white men in Queens County to make up the staffs of the various lighting companies. It would surely pay better in the long run, either from the point of work obtained proportionate to wages paid, or from any other point, to keep white men on any sort of work.

THE special election held some days ago in Fairbury, Neb., to determine whether or not a franchise to there construct and operate a gas plant, should be granted to Messrs. H. S. Fuller, E. R. Bee and J. E. Westing, for the manufacture and distribution of gas, was virtually unanimous.

LAST Friday, at a special meeting of the shareholders in the Nashville (Tenn.) Gas Light Company, it was voted to make an issue of $350,000 of treasury stock. The proceeds of its sale to go to paying for the construction of a new plant. If the advice and counselling of Mr. Cole, former President of the Company, had only been followed, the new plant would have been constructed at least a year ago. In fact, we imagine that Mr. Cole resigned from the Company's active management because he would not in any sense stand for the policy of delay which has proved so trying to the concern in the last twelvemonth. Mr. Cole is no thumb-twiddler.

THE payment made by the Sioux City (Ia.) Gas Company to the city authorities, on account of the royalty provision of its charter, for the 6 months ended June 30th, was just 1 cent short of $3,222.

GENERAL MANAGER COWDERY, of the Peoples Gas Light and Coke Company, of Chicago, Ills., has at last succeeded in securing title to the remaining properties on Michigan avenue and Adams street, necessary to complete its frontage on both routes of travel to 171 feet by 171 feet. The building to be erected on the site (northwest corner of the thoroughfares named) will be one of the handsomest in the great city of the West; and it is estimated that its construction will involve an expenditure of $2,000,000.

THE Western United Gas and Electric Company, of Joliet, Ills., is also in new office quarters located in the premises 222 Jefferson street.

MR. FRANK E. RUFFNER, for perhaps a score of years in the service of the Denver Gas and Electric Company, while on a visit to Colorado Springs, determined to ascend Pike's Peak, and made the perilous trip on foot the night of the 4th inst. On arriving at the summit he was stricken with heart failure, and all attempts to restore his vitality were ineffectual. It is said that his is the first recorded death at the summit of the Peak.

THE Eastern capitalists who some time ago proposed to construct a gas works in Monterey, Mex., are again active over the proposition.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO,
PROPRIETORS.

MONDAY, JULY 20, 1908.

The Market for Gas Securities.

Investors are now having their innings, and a certain lot of traders of the Hebraic persuasion—big guns, at that—are getting it plentifully. The short side may do for a while, but it won't do for all the while, especially when the liberties are taken with the stock of a company which has behind its capitalization more real value in land and buildings, proportionately, than any other corporation in New York State. Consolidated opened to-day at 131 and by noon had sold up to 133¼. At 2 P.M. it was 135.

Brooklyn Union also spurted up to 127½ to 128. Another dividend is on the tapis. Peoples, of Chicago, well maintains its recent advance.

Gas Stocks.

Quotations by George W. Giese, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

JULY 20.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	134½	135
Central Union Gas Co.—				
1st 5's, due 1928, J. & J.	3,000,000	1,000	93	93¼
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual	3,500,000	100	130	160
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	92	96
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98	104
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	100	105
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	90	98
Standard	5,000,000	100	70	100
Preferred	5,000,000	100	100	125
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	127¼	128
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	200,000	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	1	1 1-16
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
" " Bonds, 5's	5,250,000	1,000	63	66
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,000,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	89	90
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	92	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	87	88
Preferred	3,026,500	100	71	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,000,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,400,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	—	—	74½	75
Detroit City Gas Co.	6,000,000	50	—	50
" Prior Lien 5's	4,618,000	1,000	—	98
Detroit Gas Co., 5's	381,000	1,000	75	80
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
ort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Lt. Co., 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	100	105
" Bonds, 5's	10,500,000	—	101	102½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	—	100
Preferred	2,500,000	100	60	90
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas & Elec. Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	53¼	53½
Preferred	25,000,000	100	87	87¼
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	93¾	94
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Elec. Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104½	105½
San Francisco, Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	751,000	1,000	92	—
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	620,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	96¼	—
Syracuse, N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	102	—
Washington, D. C.	2,600,000	20	325	335
1st Mortgage, 6's	600,000	—	—	—
Western, Milwaukee	4,000,000	—	—	—
Wilmington, Del.	600,000	50	230	—

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PROPOSALS FOR STREET LIGHTING.

Bids for Street Lighting in the Township of Cranford, Union County, N. J., will be received by the Township Committee, on Wednesday, August 5, 1908, at the Township Rooms, Cranford, N. J., at 8 o'clock P.M. The present lighting consists of 211 incandescent lights, 25-candle power, and 11 arc lights, 1,200-candle power. Bids should be for this amount of lighting, with provision for increase as may from time to time be ordered.

The Township Committee reserve the right to reject any or all bids or proposals. Full information may be had by applying to the undersigned.

By order of the Township Committee.

1728-2 JAMES E. WARNER, Township Clerk.

Position Wanted

By an American man of 40, with 23 years' experience in all branches of the coal gas business from workman to superintendent. Wants position with gas company anywhere in the U. S. or Canada.

1728-1 Address, "A. M. G.," care this Journal.

PRACTICAL GAS SUPERINTENDENT

Desires Permanent Position with Medium or Small Gas Company as Manager or Superintendent.

Qualified to take entire charge of both coal and water gas properties. Clean record. Twenty-five years' experience.

1726-4 Address, "D. H. H.," care this Journal.

WANTED,

Position as Manager, Superintendent or Engineer.

A young married man, who has had nine (9) years' practical experience in office systems, distribution, operation and construction of both coal and water gas properties. Prefers in city of 20,000 to 50,000 population, either North or South. Party is a draughtsman and can handle transit and leveling idstruments.

1726-3 Address, "Xor," care this Journal.

Position Wanted.

A capable and successful gas engineer, with 10 years' experience in all branches of the gas business, desires a position as manager of a small gas company. Now employed by a large company. Best of references. Address, "C.,"

1728-2 Care this Journal.

POSITION WANTED.

First-class repairer on prepaid and ordinary gas meters. An all-round man, sober, steady and reliable. Desires to take charge of repair department in small or good sized city. Address, "A.,"

1728-1 Care this Journal.

Position Wanted

As Manager or Superintendent of Gas Company.

Have had 10 years' experience in both the construction and operation of coal and water gas plants. Can give best of references and will guarantee results.

1728-2 Address, "K. C. B.," care this Journal.

Position Wanted

As a distribution man. Can take charge of fitting shop, street work, etc., and do any work connected with this department, including mains, services, house piping, meter repairing. Also understand carbonization. Satisfaction and good work guaranteed. Steady position desired where good work will merit advancement.

1728-1 Address, "STEADY," care this Journal.

WANTED,

A traveling man to handle as a side line a commodity which is used by every gas company, on a commission basis. In answering, please state territory covered and how long you have been acquainted with the gas trade.

1728-2 Address, "W. O.," care this Journal.

WANTED,

Experienced, energetic man, to act as outside foreman and complaint man for a gas company sending out about 40,000,000 cubic feet per year. Must be a hustler and well versed in all branches of distribution, and not afraid of work. Good salary and permanent position for the right party. Must come well recommended. Address, stating experience, age, and salary expected, "F. G. C.,"

1726-2 Care this Journal.

WANTED,

One Second-Hand Purifying Box,

Not less than 12 or more than 20 feet square. Give price and particulars in first letter.

Address, JOHN H. FITZGERALD,

1727-2 BOX 849, BEAUMONT, TEX.

FOR SALE, CHEAP,

Twenty-eight 4-Burner Gas Arc Lamps.

They are of the Lovett type, complete, with glassware, and are in good condition. Apply to

POTOMAC ELECTRIC POWER CO.,

1728-3 WASHINGTON, D. C.

TO GAS MANAGERS.

We have Forty-five 5-Inch Kirkwood Boiler Burners, Twenty-one 6-Inch and Eight 3-Inch Gwynn Burners, for Sale.

These burners have been used a few months, but are in perfect working condition. Will sell at a bargain.

1725-4 CHEMUNG CO. GAS CO., Elmira, N.Y.

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 100 in use. Write to

STROH & OSIUS, Patentees, or

MICHIGAN AMMONIA WORKS, - Detroit, Mich.

STANDARD REDUCTION FACTORS for GASES,

By Helon Brooks MacFarland, B.S., M.M.E.

Price, $1.50. *For Sale by*

A. M. Callender & Co., 42 Pine St., New York City.

HOW'S YOUR METER'S LUNGS?

INLET AT TOP.

Diaphragms are to meters what lungs are to men. Condensation is to a diaphragm what Tuberculosis is to the lungs. The worse the disease the sooner the finish. The functions of both are destroyed eventually. One may never be replaced, the other, the diaphragm, may be, but at considerable cost. The way to avoid this is to use a

"SELF-DRAINING METER,"

Guaranteed free of Repairs for two years. Condensation never reaches diaphragm, insuring longer life.

ALWAYS ACCURATE.

Low speed. Extra Heavy Tin Used. Thoroughly Seasoned Diaphragm.

SAVES OVER 75 PER CENT. IN ANNUAL COST REPAIRS.

LARGEST CAPACITY of any METER MADE.

Write me for price, particulars, or to call.

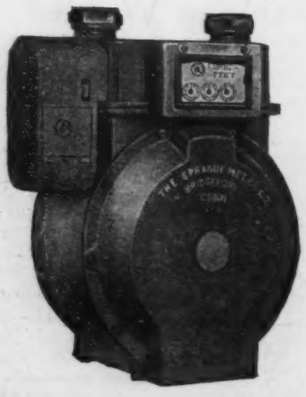
E. W. BROWN, Sole Agent,

229 to 269 Chestnut Street, Brooklyn, N. Y.

INLET AT BOTTOM.

PATENTED MAY 13, 1902.

PATENTED MAY 13, 1902.



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Manufacturers of

Cast Iron Gas Meters

for

Artificial or Natural Gas

Plain or Prepayment

Lower in first cost and cheaper to maintain than any meter on the market.

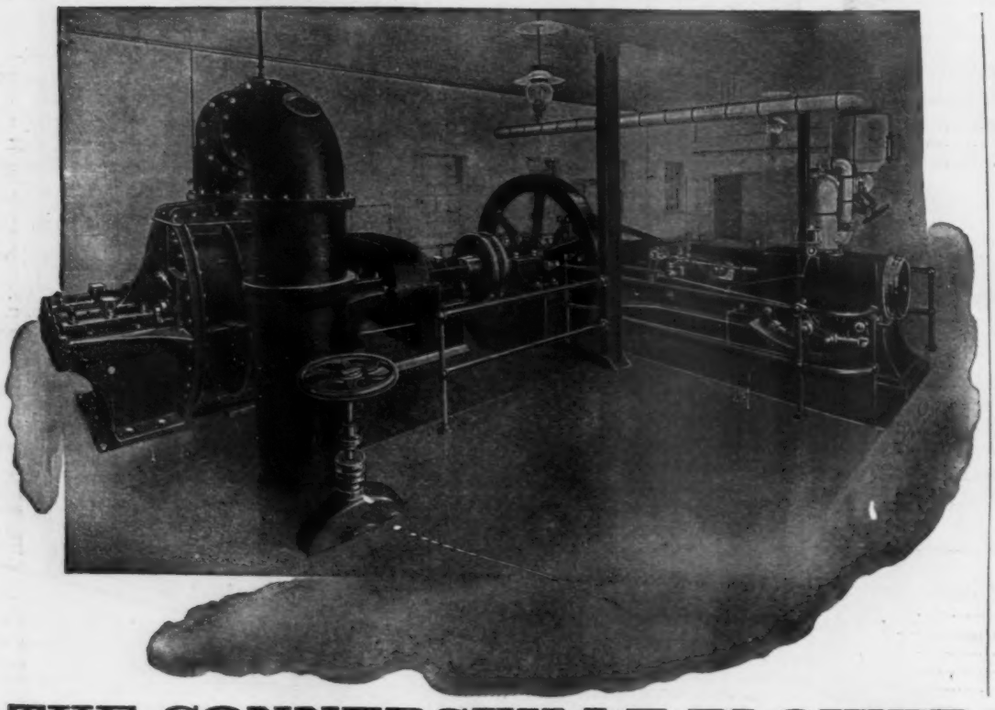
Write us for particulars.

The Sprague Meter Company

203 Water St., Bridgeport, Conn.

CONNERSVILLE GAS EXHAUSTERS

AND HIGH PRESSURE GAS PUMPS.



THIS cut shows one of our High Pressure machines and a 4-valve engine connected by one of our leather link flexible couplings. Two of these units were installed for the Peoples Gas Light and Coke Co., Chicago, at their 73d St. Station. Each machine has a capacity of 14,000,000 cubic feet per day.

We also manufacture

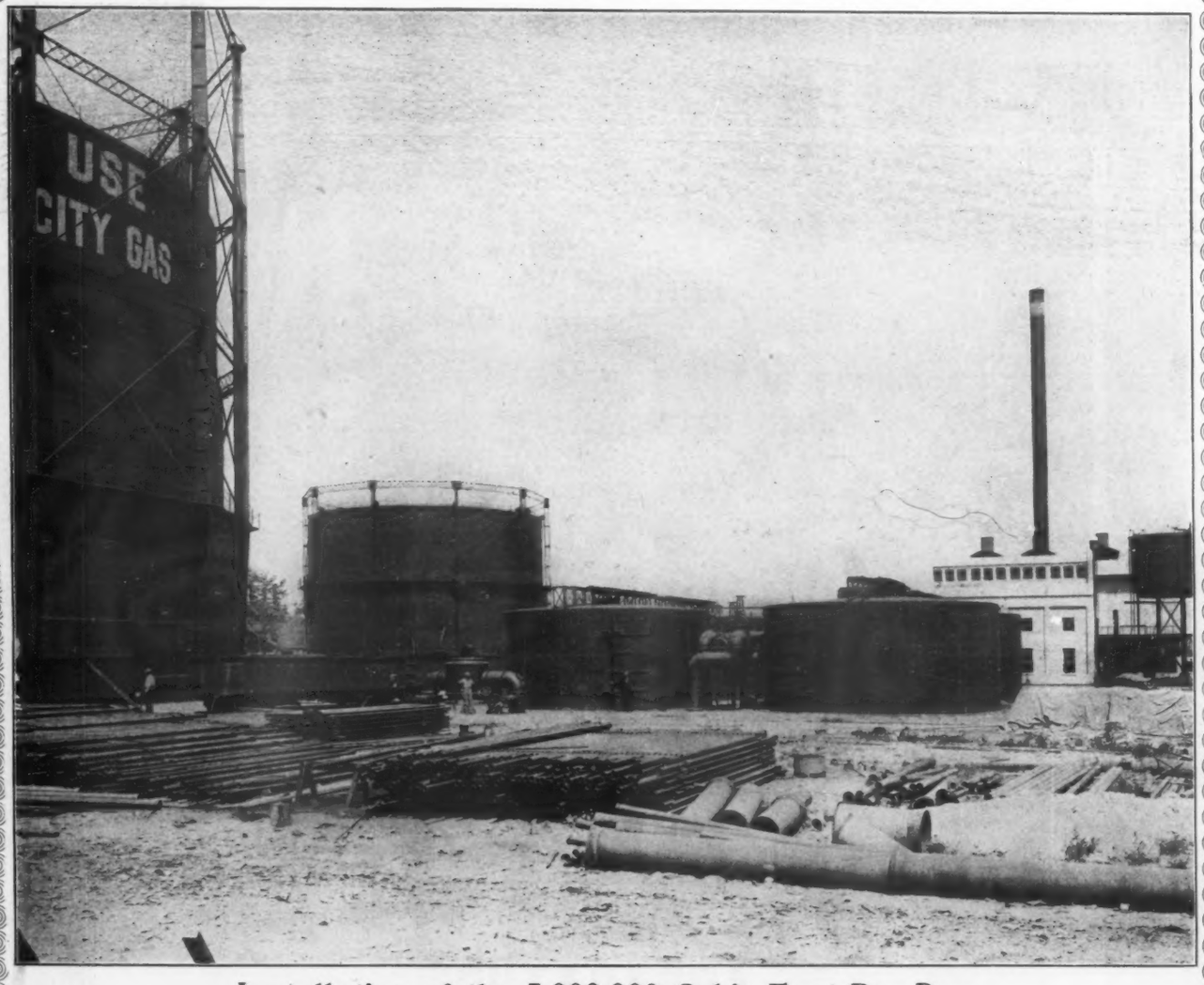
GAS VALVES,
BY-PASS VALVES,
PRESSURE REGULATORS,
ETC., ETC.

Correspondence Solicited.

THE CONNERSVILLE BLOWER COMPANY,

Connersville, Indiana, U. S. A.

NEW YORK OFFICE, 50 Church Street. - - HORACE C. COOKE, Selling Agent.



Installation of the 5,000,000 Cubic Foot Per Day

ROTARY STATION METER

At the Works of the City Gas Company, Los Angeles, California.

We have Recently Contracted with the ILLINOIS STEEL COMPANY (United States Steel Corporation) for the delivery of

FOUR (4) ROTARY STATION METERS,

Each Having a Capacity of **3,840,000 Cubic Feet per Day.**

These Machines will be Installed at Joliet, Illinois, to Measure Product of Coke Ovens Now Under Construction by that Company.

ROTARY METER COMPANY

One-half the cost—One-tenth the space of old style wet meters.

When in need of Station Meters, write

ROTARY METER COMPANY,

280 Broadway,
NEW YORK.

Send for Catalog.

P. PLANTINGA, President W. E. STEINWEDELL, Secretary

THE GAS MACHINERY CO.,

Main Office and Shops

CLEVELAND, OHIO.

NEW YORK OFFICE, - - 56 PINE STREET.

COAL AND WATER GAS APPARATUS,
EXHAUSTERS, CONDENSERS, SCRUBBERS,
TAR EXTRACTORS, WASHERS, PURIFIERS,
VALVES, CONNECTIONS.
BY PRODUCT MACHINERY,
COMPLETE GAS PLANTS.

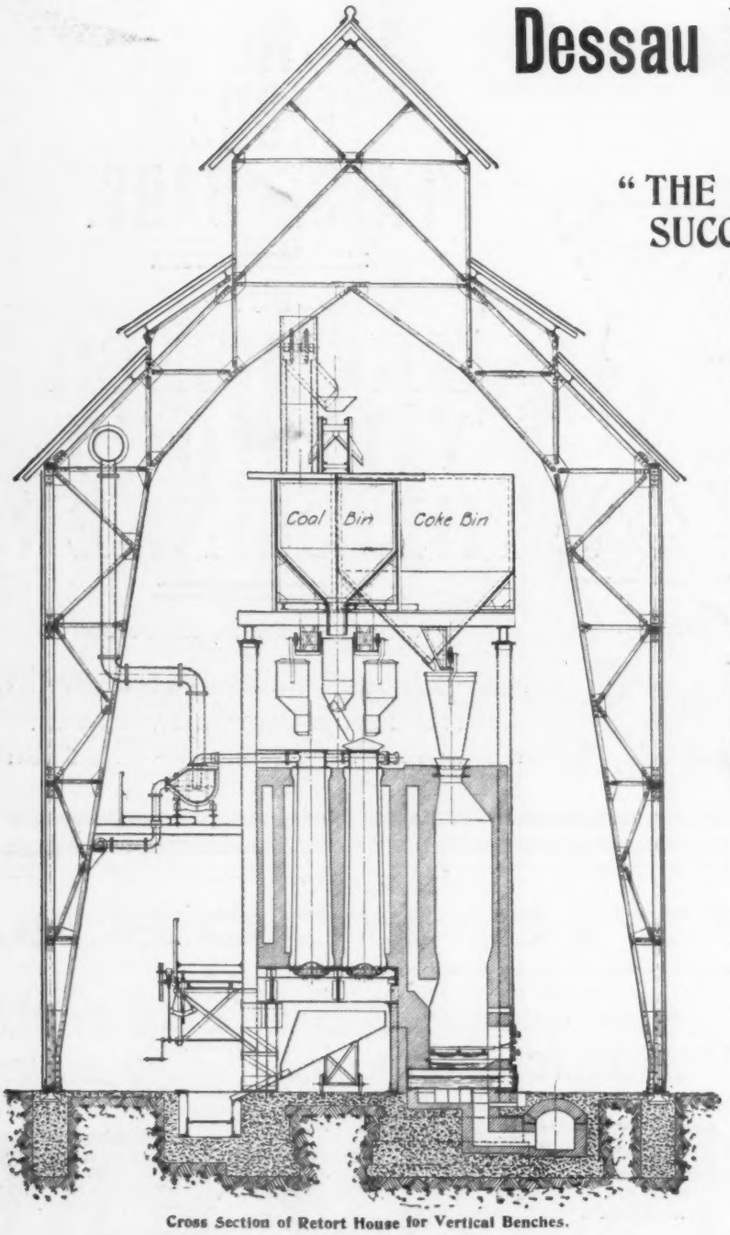
PACIFIC COAST AGENTS: Hallidie Machinery Co. Seattle Wash.

APPARATUS
FOR MANUFACTURING
AQUA AMMONIA
AND
ANHYDROUS AMMONIA.

THE GAS MACHINERY CO.
CLEVELAND, OHIO.

Dessau System of Vertical Retorts.

"THE ONLY SYSTEM IN SUCCESSFUL OPERATION."



Cross Section of Retort House for Vertical Benches.

- Nineteen Installations with 126 Benches in operation.
- **ELEVEN** Installations with **96** Benches in course of construction.
- Maximum gas produced per man per 24 hours, 360,000 cu. ft.
- Ten per cent. increase in yield of gas.
- Forty per cent. increase in yield of ammonia.
- Best quality of coke.
- Least percentage of breeze.
- Low fuel consumption.
- Tar produced low in carbon.
- Extreme low cost of retort house labor.
- Minimum expense in wear and tear.
- No Naphthaline.
- No Cyanogen.

Present Producing Capacity, 25 Million Cu. Ft.

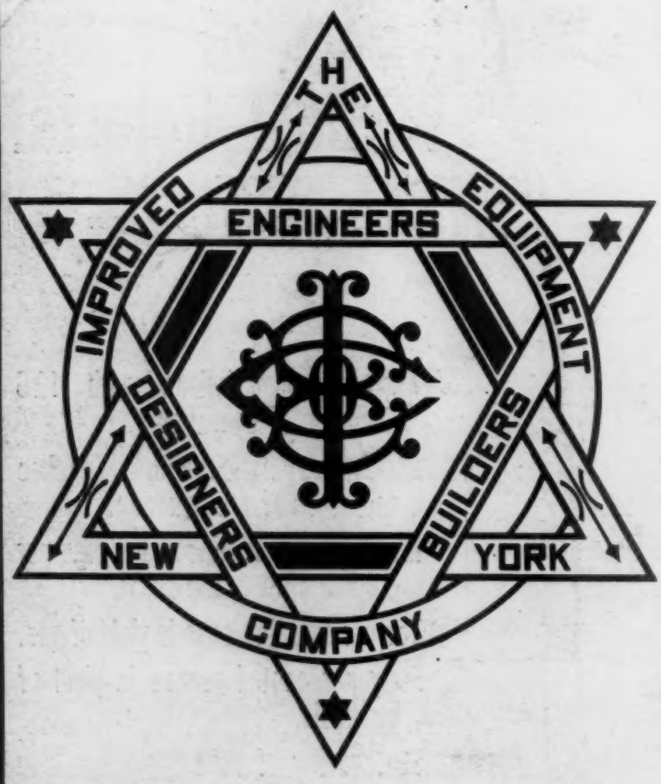
Within **90 days** the above producing capacity has been increased to **31 Million Cubic Feet** by additional orders for **39 benches** with **390 retorts.**

DIDIER-MARCH COMPANY,

FREDERICK J. MAYER, General Manager.

FACTORIES:
Keasbey, N. J.

Hudson Terminal Building, 50 Church St.,
New York City, N. Y.



NO MORE FALSE BARS.

BUY

THE BENCH WITHOUT THE CLINKER.

Write for our new Bulletin No. 2.

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MAIN OFFICES: 60 WALL STREET, NEW YORK.

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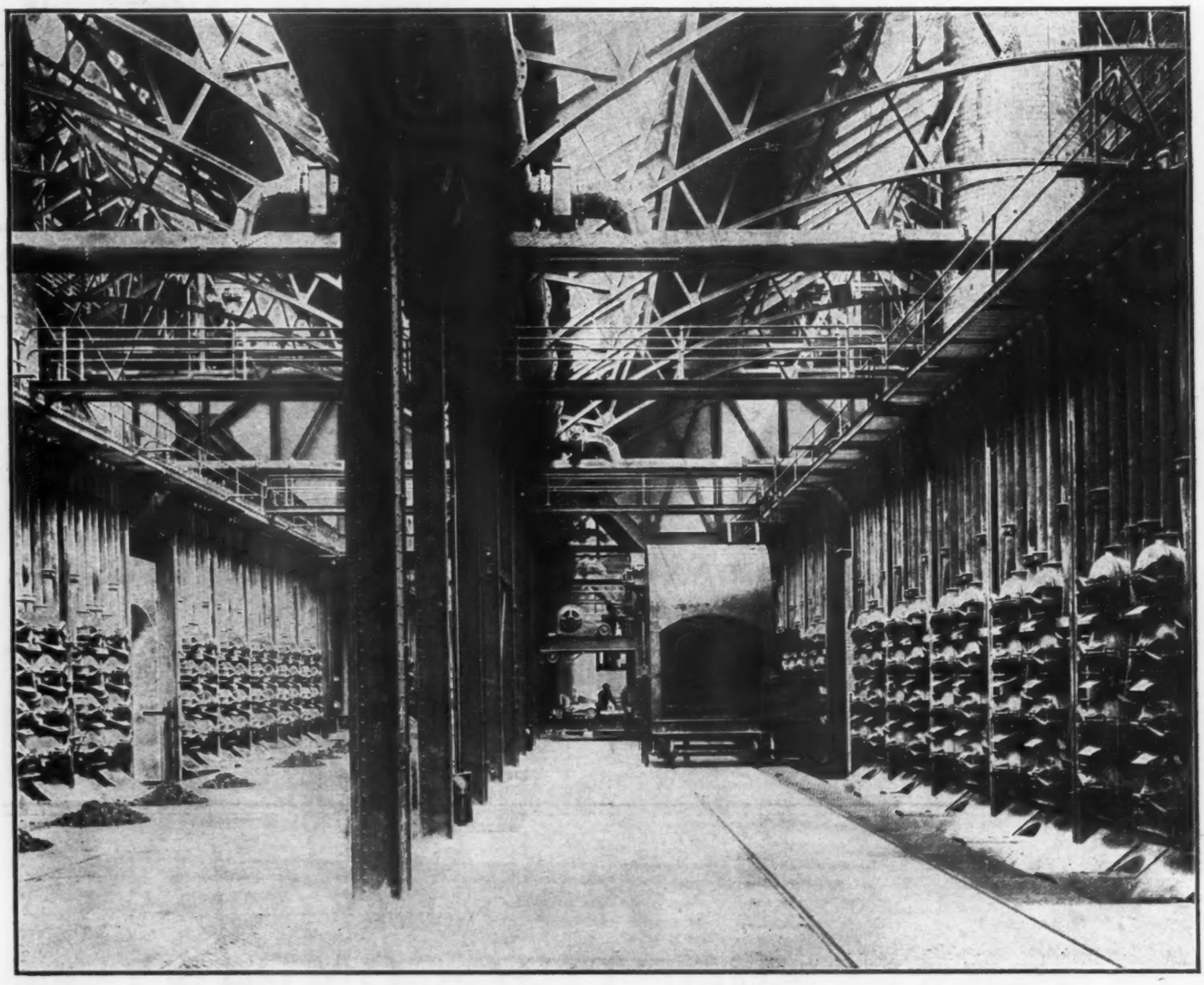

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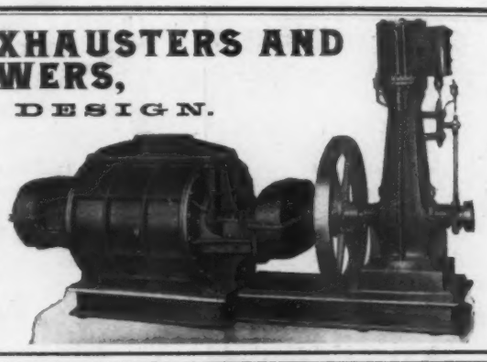

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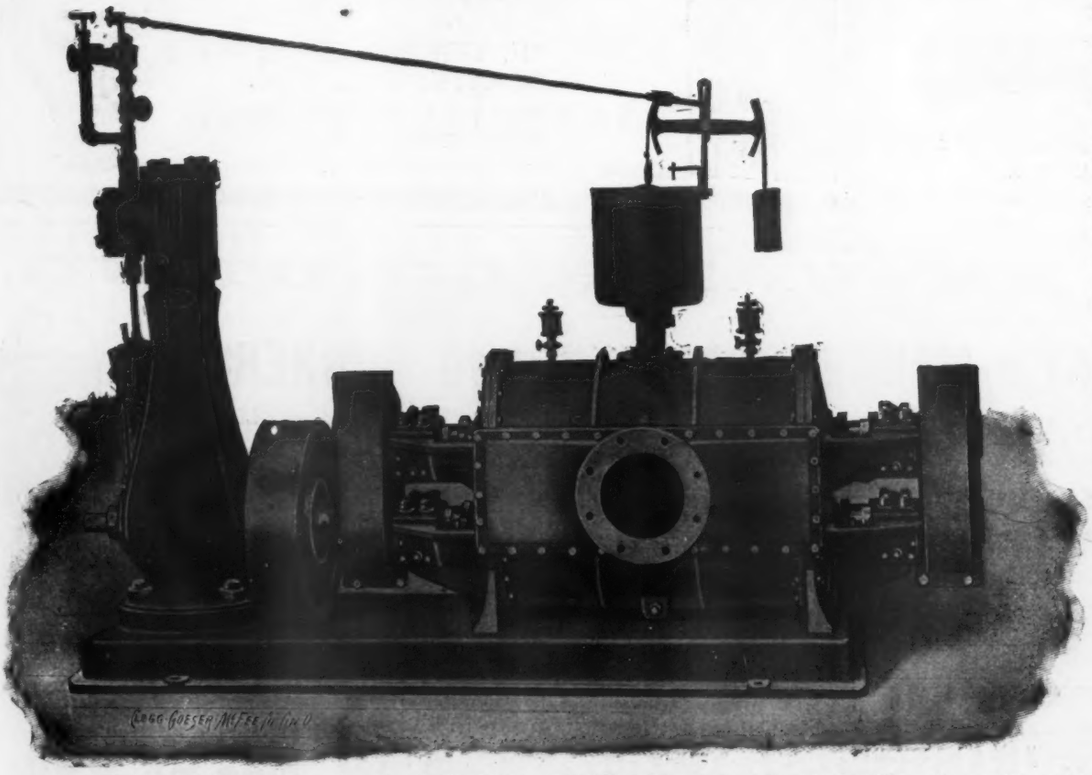

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PUBLIC LIGHTING TABLE.

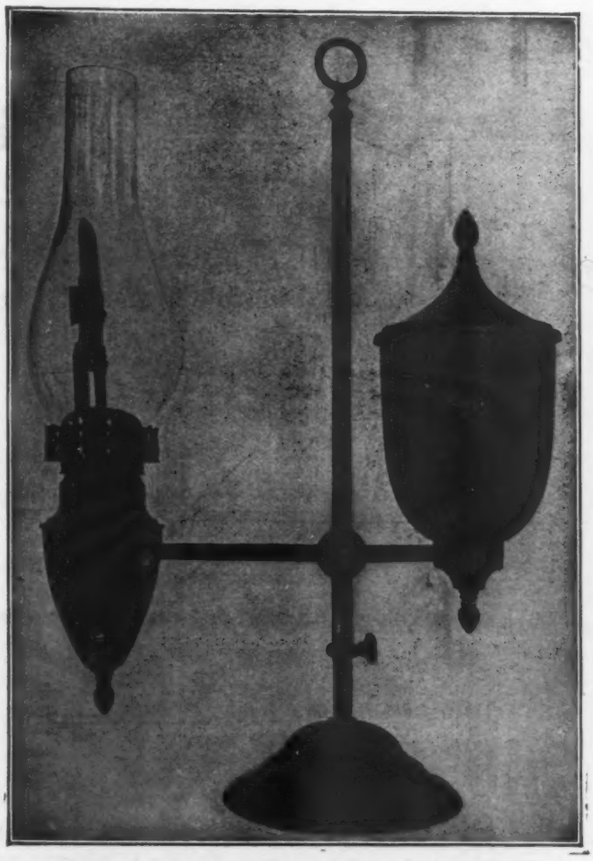
AUGUST, 1908.

Day of Week.	Date.	Table No. 1. Following the Moon. Light.	Extinguish.
Sat.	1	8.50 PM	4.00 AM
Sun.	2	9.10	4.00
Mon.	3	9.40	4.00
Tue.	4	10.00 FQ	4.00
Wed.	5	10.40	4.00
Thu.	6	11.10	4.00
Fri.	7	11.50	4.00
Sat.	8	12.50 AM	4.00
Sun.	9	1.50	4.10
Mon.	10	No L.	No L.
Tue.	11	No L FM	No L.
Wed.	12	No L.	No L.
Thu.	13	7.30 PM	9.20 PM
Fri.	14	7.30	10.00
Sat.	15	7.30	10.30
Sun.	16	7.20	11.00
Mon.	17	7.20	11.30
Tue.	18	7.20 LQ	12.00
Wed.	19	7.20	12.40 AM
Thu.	20	7.20	1.20
Fri.	21	7.20	2.10
Sat.	22	7.20	3.00
Sun.	23	7.10	4.20
Mon.	24	7.10	4.20
Tue.	25	7.10	4.20
Wed.	26	7.10 NM	4.20
Thu.	27	7.10	4.20
Fri.	28	7.10	4.20
Sat.	29	7.10	4.20
Sun.	30	7.10	4.30
Mon.	31	8.10	4.30

TOTAL HOURS DURING 1908.

By Table No. 1.

	Hrs.Min.
January	228.30
February	187.30
March	192.00
April	160.10
May	155.10
June	138.00
July	155.50
August	173.40
September	185.20
October	214.00
November	218.10
December	226.40
Total, yr.	2235.00



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3d. It is much less dangerous than Pentane, which is a kind of gasolene.

4th. It is not easily affected by air currents in the photometer room.

5th. Since the lamp may burn continuously, the candle power of gas may be taken at any moment, if necessary. This insures steady illuminating power without waste of carburetting material.

6th. The first cost of the lamp brings it within the reach of even small gas works.

7th. Costs much less to maintain than a Pentane lamp or sperm candles doing the same service.

8th. Is not affected by the weather.

PUBLIC LIGHTING TABLE.

AUGUST, 1908.

Day of Week.	Date.	Table No. 2. New York City. All Night Lighting. Complete Lighting in One Hour From Time Given P. M.	Complete Extinguishing in 50 Minutes From Time Given A.M.
Sat.	1	7.02	3.27
Sun.	2	7.02	3.27
Mon.	3	7.02	3.27
Tue.	4	7.02	3.27
Wed.	5	7.02	3.27
Thu.	6	6.57	3.37
Fri.	7	6.57	3.37
Sat.	8	6.57	3.37
Sun.	9	6.57	3.37
Mon.	10	6.57	3.37
Tue.	11	6.57	3.37
Wed.	12	6.57	3.37
Thu.	13	6.47	3.47
Fri.	14	6.47	3.47
Sat.	15	6.47	3.47
Sun.	16	6.47	3.47
Mon.	17	6.47	3.47
Tue.	18	6.47	3.47
Wed.	19	6.47	3.47
Thu.	20	6.37	3.52
Fri.	21	6.37	3.52
Sat.	22	6.37	3.52
Sun.	23	6.37	3.52
Mon.	24	6.37	3.52
Tue.	25	6.37	3.52
Wed.	26	6.37	3.52
Thu.	27	6.27	3.57
Fri.	28	6.27	3.57
Sat.	29	6.27	3.57
Sun.	30	6.27	3.57
Mon.	31	6.27	3.57

TOTAL HOURS DURING 1908.

	Hrs.Min.
January	481.50
February	329.15
March	351.50
April	341.50
May	233.05
June	218.10
July	282.55
August	254.55
September	292.25
October	420.45
November	374.30
December	411.05
	3992.35
Deduct on account of 50 min. extinguishing time	30.30
Total, yr.	3962.05

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Holyoke, Mass.
Peoria, Ills.
Schenectady, N. Y. (2d contract).
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Galveston, Tex. (2d contract).
Quebec, Canada.
Indianapolis, Ind. (2d contract).
Bessemer, Ala.
Waterbury, Conn. (5th contract).
Sioux Falls, S. D. (3d contract).
Philadelphia, Pa.
New Hartford, Conn.
Poughkeepsie, N.Y. (2d contract).
Nashville, Tenn.
Salisbury, Md.
Norfolk, Va. (4th contract).
Wallingford, Conn.
Richmond, Va. (2d contract).
Oak Bluffs, Mass.
Arlington, Mass.

TOTAL SETS INSTALLED DURING YEAR, ... 43
TOTAL SETS INSTALLED TO DECEMBER 31, 1907, ... 677
TOTAL DAILY CAPACITY, TO DECEMBER 31, 1907, ... 545,865,000 cu. ft.

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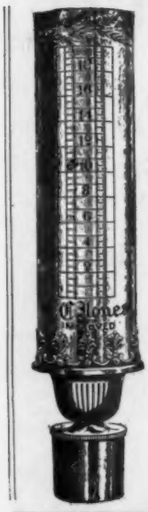

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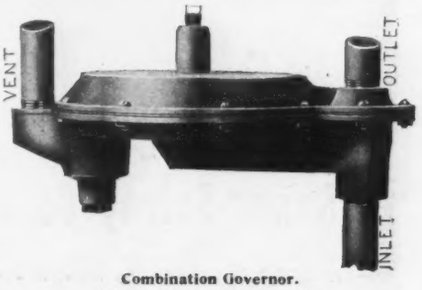

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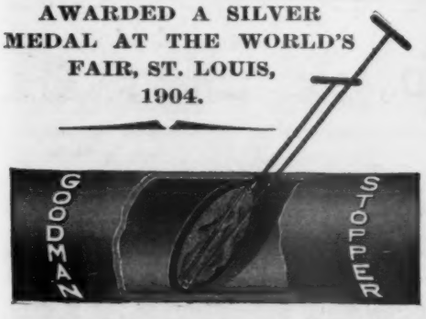

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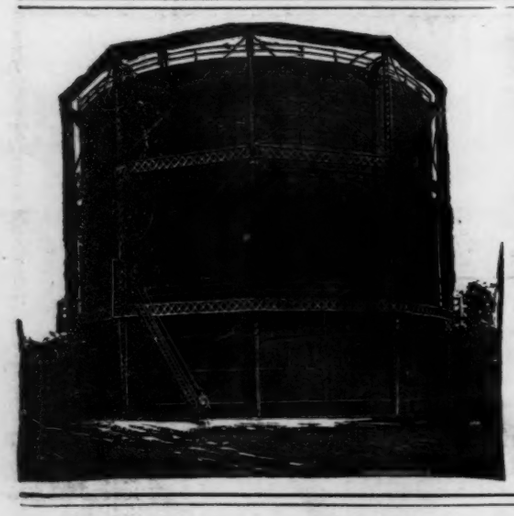

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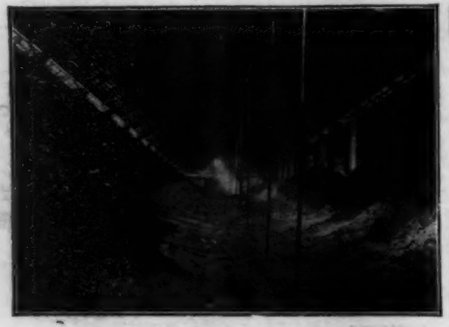

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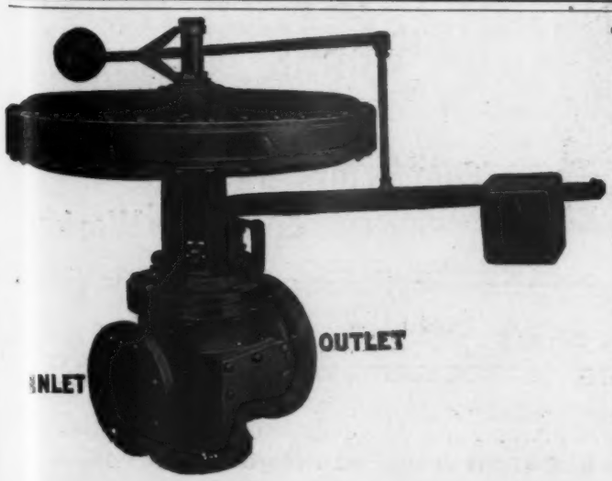

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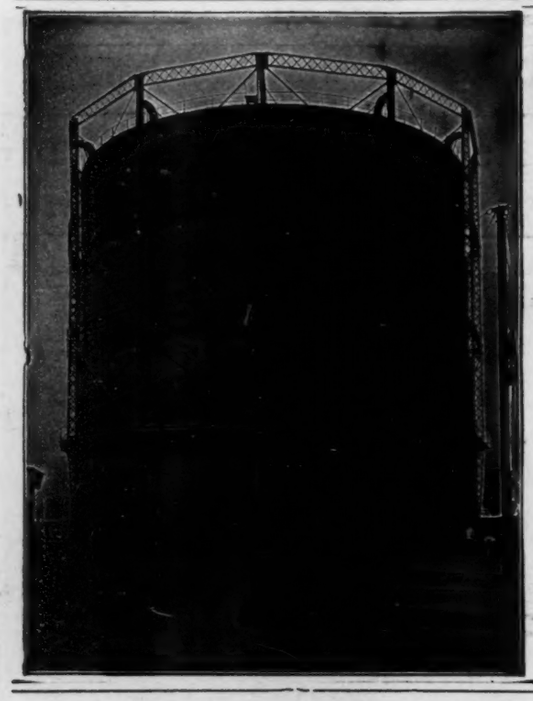

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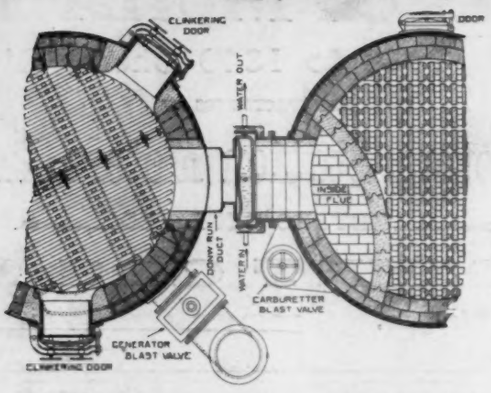

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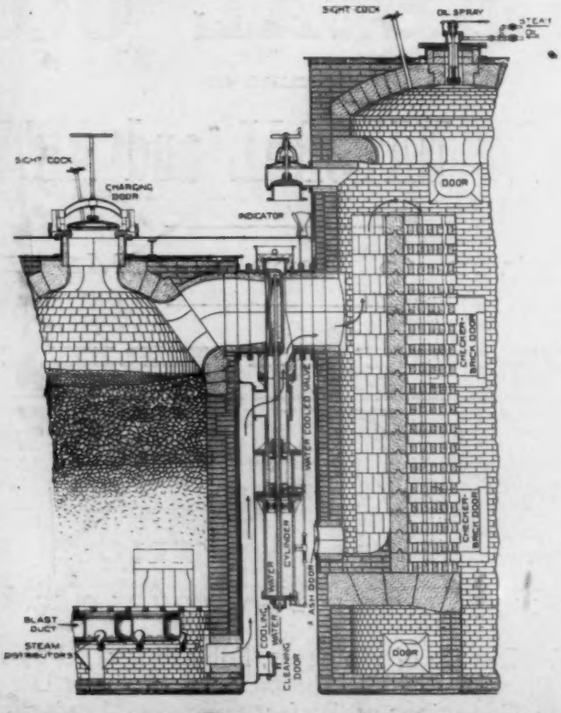

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